DOCUMENT RESUME

ED 312 502 CE 053 669

AUTHOR	Mitchell, Vernay; And Others
TITLE	Exemplary Urban Career-Oriented Secondary School Programs.
INSTITUTION	National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE	Nov 89
GRANT	V051A80004-88A
NOTE	200p.
AVAILABLE FROM	NCRVE Materials Distribution Service, Western Illinois University, 46 Horrabin Hall, Macomb, IL 61455 (Order No. MDS-012: $9.50).
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Career Education; Educational Assessment; Educational Environment; *Excellence in Education; High Schools; Instructional Effectiveness; Instructional Leadership; *Outcomes of Education; Program Costs; School Administration; School Business Relationship; *School Effectiveness; *Secondary School Curriculum; Student Placement; Success; Teacher Expectations of Students; Theory Practice Relationship; *Urban Education
IDENTIFIERS	California (Los Angeles); Illinois (Chicago); New York (New York)

ABSTRACT

The key factors in the success of nine urban high schools that prepare students for specific occupational fields as well as for college entrance were studied in an attempt to show how these high schools deliver services to students and to stimulate discussion and action that will encourage further development of exemplary career-related and college preparatory education. The exemplary schools studied are in New York City, Chicago, and a suburb of Los Angeles (Torrance). Ten success factors were identified: (1) a safe and orderly environment conducive to teaching and learning; (2) a businesslike attitude that creates an atmosphere of constructive energy in the school; (3) a warm and caring school climate; (4) an admissions process that makes students feel special and that is based on student interest in the career specialty or set of subjects and not solely on student test scores; (5) a dual mission--to prepare each student for an occupation and for college; (6) high expectations for all students to succeed, accompanied by attempts to minimize grouping of students by ability; (7) a curriculum organized around an industry or a discrete set of subjects; (8) the integration of theory and practice in instruction; (9) strong links with business and industry and with local institutions of higher education; and (10) leadership in the office of the principal that is at the same time inspiring, sensitive, and firm. (Document includes a chapter analyzing costs of operating career programs, 16 references, the interview guide and case study outline, and delivery system specifications for analyzing vocational-technical and regular high school costs.) (CML)

ED312502

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EXEMPLARY URBAN CAREER-ORIENTED SECONDARY SCHOOL PROGRAMS

Vernay Mitchell
Teachers College, Columbia University

Ellen S. Russell
University of Illinois, Urbana

Charles S. Benson
University of California, Berkeley

With the contributions of
Jay G. Chambers and Anne E. Just

National Center for Research in Vocational Education
University of California, Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

November, 1989

MDS-012

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FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A80004-88A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P. L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, D.C. 20202
Grantee:	The Regents of the University of California National Center for Research in Vocational Education 1995 University Avenue, Suite 375 Berkeley, CA 94704
Director:	Charles S. Benson
Disclaimer:	This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view of opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
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SUMMARY OF FINDINGS

This research was designed to document the key factors in the success of nine urban high schools that prepare students for specific occupational fields as well as for college entrance. The study was undertaken in order to provide information about how these high schools deliver services to students and to stimulate discussion and action which will encourage further development of exemplary career-related/college preparatory education.

New York City, Chicago, and Metropolitan Los Angeles were the locations selected for this study. They were selected because they are large urban centers in which there are significant numbers of minority students and students from low-income families. Many of the schools in these cities have a high dropout rate, especially among minority and disadvantaged populations. Even so, a number of schools in these locations are experiencing success, despite socioeconomic problems and problems associated with large school systems. We felt these schools were worth investigating.

The research yielded ten factors which may be associated with the success of the schools. Each school has many, if not all, of the following characteristics:

1. A safe and orderly environment conducive to teaching and learning.
2. A businesslike attitude on the part of students and teachers which creates an atmosphere of constructive energy in the school.
3. A warm and caring school climate.
4. An admissions process that makes students feel special—based upon student interest in the career specialty or set of subjects, not solely upon student test scores.
5. A dual mission—to prepare each student for an occupation and for college.
6. High expectations for all students to succeed accompanied by attempts to minimize grouping of students by ability.
7. A curriculum organized around an industry or a discrete set of subjects.
8. The integration of theory and practice in the courses of instruction.
9. Strong linkages with business and industry and sometimes with local institutions of higher education.
10. Leadership in the office of the principal that is at the same time inspiring, sensitive, and firm.

Two additional comments should be made. First, in each school, site administrators and teachers encounter barriers, or difficulties, as they work to maintain the characteristics that have led to success. Many of the barriers result from school system and teacher union restrictions, including rules regarding selection, hiring, and training of teachers, as well as from state and local budget allocations and the priorities that have been established for those allocations.

Second, the financial analyses in the fourth section indicate that differentials in operating or recurring costs appear to be relatively small when the exemplary schools are compared to other schools. However, the capital outlays required in certain occupational fields are large. Heavy capital costs point toward the desirability of establishing specialized high schools (by industry or subject), so that the capital costs can be spread over a sufficient number of students with common interests to make the purchase of advanced equipment feasible.

In summary, we have attempted to give a clear indication of some of the things which can, and are, being done in large urban areas to meet the needs of students. These nine schools are moving toward an ideal and have a vision about their mission to educate young people. There are other schools like them and even more, which with a little help and encouragement, can move in this direction. We hope we have provided some insight into what makes schools succeed and what needs to be done to deep them on course. We hope this report will help other schools follow their example.

INTRODUCTION

With the release of *A Nation at Risk* in 1983, there has been widespread concern over the quality of education in the United States, especially in our high schools. There are, however, a number of high schools that are doing an excellent job, despite the enormous problems facing the schools today.

For the past decade, we have had the opportunity to observe the operation of a set of exceptional secondary schools that exist in or near large cities. Indeed, one of the authors, Dr. Russell, is chiefly responsible for the creation of one of these exemplary institutions.

After a few brief comments about the three school systems of New York City, Chicago, and Los Angeles, we will present case studies of secondary programs within those systems. These case studies highlight the ten important characteristics of successful inner city schools, as listed in the Summary of Findings. To some extent, these characteristics can be defended by reference to the educational literature, though, as we all know, educational literature is not itself without controversy. Even so, our list of preferred characteristics may appear to reflect our ideology, and so be it.

Case studies were written for nine successful schools or, in one case, a successful program in a school. Six of the schools are in New York City, two are in Chicago, and one is in the metropolitan Los Angeles area. They were identified as exemplary by the following three criteria:

1. The school, or a program within a school, was rated highly by school district personnel.

2. More students want to attend the school than can be accepted; or in the case of the program which was studied, the popularity of the program is increasing dramatically.

3. The school as a whole, or a program contained within the school, is reported to have above average success in motivating students to stay in school.

The schools identified for this research were as follows:

- **New York**

  Aviation High School
  High School of Fashion Industries
  Murry Bergtraum High School for Business Careers
  The Entrepreneurship Program at Jane Addams High School
  Brooklyn Technical High School
  Manhattan Center High School for Science and Mathematics

- **Chicago**

  Chicago High School for Agricultural Sciences
  George Westinghouse Vocational High School

- **Metropolitan Los Angeles**

  Southern California Regional Occupational Center

Site visits to the schools took place during the 1987-1988 and 1988-89 academic years. We spent two to four days in each school touring the buildings, interviewing teachers and administrators, observing classes, and talking informally to students. The interview guide, which is in Appendix A1, was used in an unstructured manner. It was not always adhered to in terms of a strict sequence, but efforts were made to have all of the questions answered by all of the schools. Interviewees were informed that the school or program had been chosen for the study because of its exemplary nature.

At times, the uniqueness of each school situation made uniformity of question and response impossible. In some instances, dissimilarities among the schools made it difficult to make comparisons among the case studies. For example, most of the schools had lower dropout rates than the school district as a whole, but in trying to report these rates we found that the computations are done in a variety of ways. It is important that the reader keep this in mind when making comparisons.

Although the tour of the school, the interviews, and the observations could have been conducted in less time than we took in each school, an important strategy was to schedule them over two to four days. In this way the preliminary data collected on the first visit could be reviewed for uniformity and questions could be posed in the subsequent visits about data we found to be puzzling or incomplete. We also consulted reports and/or promotional materials published by the schools and by the respective Boards of Education.

We do not suggest that each of the nine schools discussed here represents the complete embodiment of our set of preferred characteristics, but each has a sufficiency to be regarded as distinctive. Also included in each case study is a section about issues. These are problems to be solved and barriers to be overcome in the progress of these schools toward a more ideal state of service to students.

Following the case studies is an in-depth financial analysis of the schools for which case studies have been presented. How much does an exemplary integrated program offering academic preparation and a high standard of occupational skills cost as compared to conventional secondary programs? A very fine-grained analysis of this question is offered.

Finally, we discuss the findings and draw conclusions from the case studies. These should be of interest to a varied audience of practitioners, administrators, and policymakers. Implications for policy at local, regional, and national levels are presented.

This study could not have been conducted without the cooperation of many persons in New York City, New York; Chicago, Illinois; and Los Angeles County, California. Our sincere thanks to those individuals in the school systems and the schools themselves who made this research possible.

We wish to thank Laura Jeanne Gomez, Administrative Assistant for the National Center for Research in Vocational Education, for her tireless effort in preparing this manuscript.

THE SCHOOL DISTRICTS

Major organizational differences exist among the New York City and Chicago public school systems and the regionalized district in Southern California. These must be taken into account when reading the case studies and drawing conclusions about the patterns in exemplary occupational education.

New York City Public Schools

With nearly one million students enrolled, and a budget of $6.4 billion, New York City has the largest public school system in the United States. Of the 940,000 students in the system, over seventy-five percent are from minority groups—39.3% are Black, 29.5% are Hispanic, 24% are White, 7.1% are Asian or Pacific Islander, and .1% are Alaskan or Native American Indian.

The city system is under the jurisdiction of the New York State Board of Regents, but many functions such as developing curriculum and certifying teachers are accomplished at the city level. The Regents require all students in New York City to score at least a minimum level of competence on statewide tests.

Two types of regional organization structure the one-thousand schools into administrative districts. The first is the placement of all elementary schools, intermediate schools, and junior high schools into thirty-two community school districts which are administered by locally elected school boards.

The intermediate schools, which usually include grades six through eight, and the junior high schools, which usually include grades seven through nine, are feeder schools for one-hundred and thirteen high schools. The high schools are administered by the central Board of Education which appoints five high school superintendents. Their jurisdictions correspond loosely to the five boroughs of New York City: Manhattan, the Bronx, Brooklyn, Queens, and Staten Island. Until 1983, the vocational high schools were organized under a separate superintendent. Citing the need for all students to have a broad education, the Board of Education changed the organization to one in which the vocational schools are administered by the superintendents in the respective boroughs. When we asked vocational school personnel how this change had affected them, their answers

indicated that it was a negative change. They feel there are no longer any advocates for vocational education in the top levels of the system.

Seventy-seven of the high schools are categorized as academic/comprehensive schools, twenty are vocational or vocational/technical schools, and sixteen are alternative schools. The category containing the most high schools, academic/comprehensive, is divided into the following three types: (1) zoned schools, which hold seats for all students according to where they reside; (2) educational options schools, which offer three years of instruction in specific career areas and accept students according to a number of selection criteria; and (3) specialized high schools, which select students based on the results of a competitive examination. The schools designated as educational options schools are ones which generally fit the term "magnet schools." They have specialized programs that attract some students away from their zoned schools and promote more racial heterogeneity.

All of New York City's high schools, except some alternative schools, are four year programs. Vocational schools, option schools, and specialized schools usually select students from any part of the city. Students may enter in grade nine or grade ten. The high schools have developed selection and programming procedures for students entering from intermediate schools, junior high schools, and from other high schools.

On the application to New York City high schools, students list their choices of school and program in order of preference. They are accepted into schools during two rounds of selection which occur citywide. For example, a student who has taken the competitive examination for a specialized high school may have listed that as first choice and perhaps a vocational school as the second choice. If the student is accepted into both schools, he or she will probably accept the seat at the specialized school during the first round of selection and turn down the acceptance from the vocational school since acceptance into a specialized school is usually more desirable to highly-qualified students. Thus during the second round, that student is out of the selection pool and the seat at the vocational school will be offered to another student. Students who are not accepted to specialized schools, vocational schools, or option schools are assigned to their zoned high schools.

The selection procedure in New York City has become complex, not only in its administration, but also in the behavioral sense in that parents and students have developed strategies to use the complexities of the system to maximize the chance of being chosen for

their school of preference. For example, eighth graders who are not accepted to their first choice school sometimes remain in junior high school so that they may reapply to high school again in grade nine. Many students try to avoid going to zoned schools. They and their parents generally feel that zoned schools are academically inferior and not as safe as vocational and option schools. This set of complexities and strategies is an important part of how vocational and career-related education takes place in New York City.

The reduction of overcrowding and the promotion of racial balance is accomplished in the New York City Schools by the Optional Assignment Programs. These are student assignment schemes that give eligible students a wider choice of high schools by disregarding zone restrictions. In other words, students who are not accepted to vocational or option schools may apply to go to a zoned school that is not designated for them if it will result in the achievement of a student body which is more balanced by race, ethnicity, and/or gender.

The dropout rate for high school students in New York City was 22.4% for the class of 1987. This rate was computed by calculating the number of students who were enrolled as freshmen in 1983 and subtracting from it the number of students in that cohort who were not enrolled in high school and had not transferred out of the system in 1987.

The administrative organization within New York City high schools varies from many other systems. Each high school has numerous assistant principals who are responsible for academic areas, guidance, and administration. These assistant principals usually teach one course a day and spend the rest of their time in administration and supervision of teachers in their discipline. There is a shortage of vocational educators, especially shop teachers, in New York City. Presently, approximately seventy-five percent of the vocational teaching staff are within five years of the time they may be expected to retire.

Several factors have diminished the supply of qualified vocational education teachers in the school system. One was the city's financial crisis in 1975 during which many vocational teachers (and others) were not rehired. Many of these teachers found employment in the trades and did not return to teaching. Another problem which is still of general concern is that even with recent increases, teachers' salaries are lower than those of people working in business and industry. Even though people working in various trades for at least five years can teach in vocational schools while they are taking the college courses

required for their teaching certificates, it is still difficult to attract new vocational teachers without special incentives.

A long-range program to increase the number of vocational teachers in New York City is the Substitute Vocational Assistant (SVA) Program. Most of the vocational high schools participate in this program for which students who have graduated from vocational schools apply. If they are accepted into the program, they become teaching assistants earning nine-tenths of a beginning teacher's salary while attending college at night and spending their days alternating between a job in industry and teaching in a vocational school. During their teaching assignments they work with a mentor who is a certified vocational teacher. Their tuition costs are paid by the Board of Education and they receive full union benefits. At the end of five years the "SVAs" will be certified vocational teachers.

This program is an incentive to vocational education graduates to become vocational teachers. As it includes twenty-nine different skilled trades taught in New York City vocational schools, it should help to ease the shortage by providing teachers who are knowledgeable and experienced. Vocational teachers encourage graduating students to enter the program, but they admit that recruitment of students to become SVAs is increasingly difficult.

The Chicago Public Schools

The Chicago Public Schools constitutes the third largest school district in the nation. There are almost 425,000 students enrolled in four-hundred and ninety-five elementary schools and sixty-five secondary schools. There are no junior high schools in the district. The school district employs forty thousand people and has an annual budget approaching two billion dollars.

Student racial/ethnic composition in Chicago in 1987-88 was 60% Black, 24% Hispanic, 12.9% White, 2.9% Asian/Pacific Islander, and 0.2% Alaskan Native/American Indian. The dropout rate is one of the highest in the nation. The most recent figures are for the class of 1985, which had a dropout rate of 44.9%.

The district is governed by an eleven member Board of Education appointed by the Mayor. The General Superintendent of Schools and the Chief Financial Officer report to the Board. The district has a central office operation as well as subdistricts throughout the

city. There are currently twenty elementary districts and three high school districts geographically located in the North, Central, and South sections of the city. The superintendents of those districts report to the Deputy Superintendent of Schools, the second person in charge.

The administrative organization within Chicago high schools includes a principal and several assistant principals, the number depending upon the school's enrollment. The assistant principals are responsible for attendance, discipline, programming, and other administrative matters. Department chairpersons are regular classroom teachers elected by their peers to serve as leaders. Unlike the department chairs in New York City, they have no released time, no extra pay, and no responsibility for supervision of other teachers.

There are 115,778 high school students who attend fifty-six general high schools and nine vocational high schools. A number of these schools have magnet programs or operate as magnet schools, drawing students from all parts of the city.

Vocational education in Chicago has not been accused of being a dumping ground for students who are less able academically. In fact, vocational schools have had the reputation over the years of being elitist because they require entering ninth grade students to have a standardized reading and math score of at least 7.0. General, or neighborhood, high schools must accept all students within their boundaries, regardless of reading and math scores.

Although vocational high schools have traditionally drawn better students than the general high schools, they have still come under attack in recent years for not responding to needs in business and industry, for continuing to provide training in occupations no longer viable, for not keeping up-to-date in various occupational areas, and for providing poor or inadequate career counseling to students.

Magnet schools have been effective in attracting and retaining students as well as in increasing racial diversity in the schools. Student selection is controlled by each high school district. Although the schools are able to pre-screen applications, the acceptance decisions are made at the district level. If more applicants apply than there are spaces, the district selects students by lottery. Standardized test scores cannot be used as criteria for admission. However, report card grades and attendance patterns can be used to screen applicants. All magnet schools have waiting lists.

As in New York City, students in Chicago try to avoid attending their neighborhood high schools because they are considered academically inferior and not as safe as vocational and magnet high schools.

The Chicago Public Schools have the same problem as the New York City schools in attracting qualified teachers in occupational areas because these people can make more money in business and industry. A serious teacher shortage has not yet occurred in the vocational area, however.

Los Angeles County Public Schools

Los Angeles County is the second largest population center in the United States. Covering 4,083 square miles, the county's 1988 population was 8,265,100. Within the county's boundaries are numerous incorporated areas or cities, each with its own mayor and city council. The largest city is Los Angeles, which covers 467 square miles with almost 3.3 million residents. Surrounding the cities are unincorporated areas governed by the Los Angeles Board of Supervisors.

Los Angeles Unified School District

The Los Angeles Unified School District (LAUSD) serves almost all 467 square miles of the city of Los Angeles and the eight other cities in the county: Cudahy, Gardena, Huntington Park, Lomita, Maywood, San Fernando, Vernon, and West Hollywood. Also, within the district's boundaries are portions of nineteen other cities and many unincorporated areas. The total LAUSD service area covers 708 square miles, ranging south of San Pedro and north of Chatsworth in the San Fernando Valley. The district's population base in this service area is almost four million people.

As Los Angeles County is the country's second largest population center after New York City, so too is LAUSD after the New York City Public School System. As of October, 1988, the K-12 LAUSD enrollment was almost 595,000 students. The senior high school (grades 10-12) enrollment was close to 120,000; magnet schools and centers (K-12) totaled 27,100.

LAUSD K-12 enrollment constitutes forty-five percent of all students enrolled in public elementary and secondary schools in Los Angeles County. This same LAUSD student population made up 13.2% of *all* California K-12 public school enrollments.

There is considerable ethnic diversity in the district. Using the 1988 K-12 student enrollment figure, the LAUSD ethnic composition was as follows: (1) Asian, 8.2%; (2) Black, 17.7%; (3) Caucasian, 16.9%; (4) Hispanic, 56.8%; and (5) Native American, 0.3%. The district's bilingual education program serves almost 160,000 students. Although eighty-one different languages are represented in the district, Spanish is spoken by ninety percent of the students in bilingual education.

The district has a total of 825 schools and centers to provide educational services. Of these facilities, forty-nine schools are senior high schools; six are occupational centers (grades nine through adult); and eighty-seven are K-12 magnet schools or programs

LAUSD employs 57,379 regular, full-time employees. Of this total, 50.6%, or 29,029, are certified teaching staff. The other certificated personnel include 4,063 administrators and counselors. The remaining 24,287 classified (nonteaching) staff, 42.3% of all staff, provide various support services throughout the district.

The total 1988-89 school year district budget totaled nearly $3.5 billion. This figure makes LAUSD financially equal in size to the twenty-third largest corporation in California. State aid comprises the largest percentage, 75.9%, of the district's budget. The next two largest percentages are local taxes controlled by the state, ten percent, and federal aid, nine percent. Other sources of income include developer fees and interest on LAUSD investments (less than two percent each), and cafeteria sales, local taxes for debt services, and other local income (less than one percent each).

District expenditures from this budget are primarily concentrated in salaries and benefits at 70.4% of the $3.5 billion total. Other expenses include such items as instructional materials, utilities, land and buildings, food, debt service, and reserves.

LAUSD administration and governance is largely decentralized. The central LAUSD headquarters office in downtown Los Angeles houses the Superintendent of Schools and two Deputy Superintendents (one for schools, the other for school operations) and the Chief Business and Financial Officer and much of their staff. Paralleling the

downtown offices, however, are eight administrative regions throughout the district each with a superintendent responsible for the elementary, junior high, and magnet schools in that region. Four other major administrative units include the senior high schools division, the adult and occupational education division, the child development division, and the division of special education.

The LAUSD Board of Education has seven members who are elected for four-year terms from specific geographic areas of the district. Elections occur every two years with odd-numbered and even-numbered seats alternating at each election as terms expire. Each board member has an office and support staff at the district's headquarters.

THE CASE STUDIES

Aviation High School
New York, New York

Setting and Climate

Twenty airplanes fill an enormous cavity of indoor/outdoor space at Aviation High School. The 1,680 students and 215 staff members ride six stories of escalators passing to and from classes and offices in this twenty-seven year old school. The school is a place, according to the Student Organization President, where "time is wisely spent." It offers New York City youngsters a chance to specialize in aviation mechanics and careers relating to engineering while receiving a solid academic education. Students have the opportunity to receive various diplomas and certificates from New York State, New York City, the Federal Aviation Administration (FAA), and the Federal Communications Commission (FCC) upon graduation.

The school is organized into specialized areas including rooms for administration and guidance, academic classrooms, laboratories, and heavy machinery shops. Behind it all lies the hangar full of planes and aviation paraphernalia. The location of the school in the borough of Queens makes it convenient to both of New York City's airports.

Students

It is understandable why more than three thousand students apply for the six to seven hundred vacancies in the school each year. The faculty and students take pride in the fact that Aviation is compared with and shares applicants with New York City's three examination high schools, which are the Bronx High School of Science, Brooklyn Technical High School, and Stuyvesant High School.

Ten years ago Aviation High School had an enrollment of 2,900, nearly 150% over capacity. Part of the reason for the decrease in the student population was a decrease in available space. Over the last decade Aviation has lost fifteen percent of its academic classroom space to new populations and services which have been added. These include special education classes (initiated at Aviation seven years ago), more guidance personnel, three rooms converted into computer laboratories, and a room for a school-based support team.

The student population now includes 1,751 males and 103 females. Of the total, sixteen percent are Black, twenty-one percent are White, fifty percent Hispanic and thirteen percent are

Asian. Next year more than 1,900 students are expected; at that point the school will be up to its present capacity. A public relations campaign is being used to encourage more females to apply. Females who are already enrolled travel to the junior high schools and middle schools to tell prospective students about the school. Videos and posters will be made showing males and females working and studying at Aviation, and a girls' locker room will be built. Despite such efforts, the female enrollment is expected to rise very slowly, if at all, since aviation and engineering careers are still seen by many people as masculine domains.

Until the 1987-88 freshman class was selected, Aviation High School applicants were required to take an entrance examination. Now the applicants are accepted, rejected, or put on a waiting list as the guidance staff review their cumulative school records using the following four weighted criteria: (1) fifteen percent—applicant's choice of the school (an applicant who chooses Aviation as a first choice would receive fifteen points); (2) forty percent—scores on standardized reading and math tests (forty points for being above grade level, twenty points for being on grade level); (3) twenty-five percent—record for attendance and lateness (twenty-five points for being late or absent less than ten days in junior high school); and (4) twenty percent—academic performance (twenty points for having all grades at seventy-five percent or above). Fewer points are awarded in each category when the student does not meet the standards specified above.

The highest number of points an applicant can receive is one hundred. After all applicants have been rated, they are ranked by their point totals. Students are accepted from the top of this ranked list. When the number of students accepted equals the school's number of vacancies, the next students on the ranked list are put on a waiting list. This year the lowest point total of any accepted student was eighty-five.

Despite this selection process there are some students who get accepted at Aviation who need help with some academic skills, and for some English is their second language. The work, for them, may be especially difficult since most of the textbooks in these highly technical areas are written at an eleventh grade reading level. A peer tutoring program is in place to help prevent failures. If students do fail, the courses can be retaken in summer school or the following year.

The school's Aeronautical Advisory Committee, which is made up of airline employees, has suggested that the entrance test for applicants should be reinstated. Part of the reason is that very high standards are set for the awarding of the FAA certificate and, thus, the quality of the candidates must be assured by a standardized measure. Presently, a ruling by the New York City

Board of Education eliminates entrance exams for all but the three high schools mentioned previously.

Like most exemplary schools, Aviation has an attendance rate which is higher and a dropout rate which is lower than most schools in the system. More than ninety-five percent of the students graduate. A peer tutoring program is in place to try and help students before they fall behind in their work. The general progress of the student body and of graduates is monitored by the Advisory Board in a effort to continue the high standards and to recommend improvements where needed.

Mission and Curriculum

School personnel attribute the success and popularity of this school to the following interrelated factors: (1) it is the only public school of its kind in the United States; (2) it is one of the few high schools certified by the FAA; (3) it prepares students well in the academic areas so that graduates do well in colleges; (4) it provides students with a trade and connections which easily translate into job offers; and (5) it has an atmosphere which is safe, free of crime and delinquency, and conducive to learning.

The curriculum structure at Aviation High School was brought about by the numerous and stringent requirements for various licenses. There was a switch from a three year plan of specialization to a four year plan. After the switch there was a lower passing rate for FCC and FAA exams. School administrators think that perhaps the ninth graders lacked the maturity to succeed in such a rigorous environment during their first year in high school. Here, as in other schools we studied, administrators reported that freshmen seem to do better when they pursue an exploratory program for a year. This allows them to become familiar with the school and its offerings before they must declare a major.

The course offerings at Aviation High School have changed often in the past several years to accommodate new mandates and more stringent requirements from both New York State and the aviation industry. Students are encouraged to take the higher level mathematics and science courses which will lead to a diploma endorsed by the New York State Regents. A typical student schedule would include ten periods per week of exploratory shop in grade nine, fifteen periods per week of composite airframes in grade ten, twenty periods of basic power plant operations in grade eleven, and a specialization of twenty periods per week in grade twelve.

These vocational classes are accompanied by up to eight terms of science, two to four years of mathematics and eight required terms of English and social studies. Thus the students have a chance to finish the requirements for a diploma and for one license by the time they graduate. It is difficult for students to get a second license, however, unless they return to Aviation as a graduate. Students can participate in the school's cooperative education program in which they can work as interns in industries while they attend school. There are also several special option programs for seniors such as the pre-engineering program.

Given the expanding nature of today's aerospace industry, students from Aviation High School have many choices upon graduation. First of all, they can work for an airline immediately after finishing high school. Also, there are jobs in other technical fields for which these graduates may be hired such as the sheet metal trades, hydraulic systems, and the transportation industries. Over sixty-five percent of the graduates go on to some form of higher education. Military academies and professional graduate schools have accepted many students from this school.

Staffing

The principal at Aviation High School likes to have input into the selection of teachers. Accepting those who are sent from the Board of Education has not always worked well. He would like teachers of academic subjects to have some interest or knowledge of the Aviation industry in order to attain a better fit between the learning in shops and that in academic classrooms. He prefers teachers who not only have knowledge of the subject matter but who understand how to communicate with high school students in positive ways verbally and nonverbally.

The faculty and staff of Aviation include one-hundred and twenty teachers, nine assistant principals, a principal, and various support staff persons. Forty percent of the full-time staff are female and thirteen percent are from minority groups. Four to five years ago there was a pronounced shortage of teachers for the vocational areas taught in this school because qualified persons could receive much higher salaries working in industry. The situation has improved somewhat as teachers' salaries have increased.

For two years, Aviation High School has participated in the Substitute Vocational Assistant (SVA) Program described earlier. Teachers try to motivate students, especially those from underrepresented groups like ethnic minorities and females, to take advantage of the SVA Program.

Inservice training for Aviation's teachers is expensive and time consuming. There is a need for the faculty to keep abreast of changes in Aviation technology and other fields, but in order to do this they must be released from teaching duties, substitutes must be hired, transportation costs must be reimbursed, and trainers must be paid. Until the mid 1970s, there were monies to send teachers to some of the two-day seminars given by the airlines. Since the city's budget crisis, these funds are no longer forthcoming. Renowned firms such as Grumman offer such training, but without funding the school cannot take advantage of such opportunities.

Linkages

Close ties between the school, businesses, and the community help to assure the recognition of Aviation graduates. All major airlines and the Grumman Corporation keep in contact with Aviation through the school's Aeronautics Advisory Board. This board assures that the subject matter and skills taught at Aviation are the ones most needed in aviation. It acts as a sort of quality control with the interest of the school and the industry in mind.

Another link provides a way for students to work toward a second license and an Associate's Degree. A local community college has combined its two year program with Aviation High School so that students may attend the college and the high school simultaneously if they have an Aviation diploma. Two years after graduating from high school they have an Associate's Degree and a second license.

Issues

According to the principal, one of the school's most pressing unmet needs is for an extra $500,000 per year to institute a formal program for a thirteenth year of schooling. In this way ninth graders can have the exploratory instruction they need and students in the last year, the thirteenth year, will be able to have the shop classes needed to prepare them for the second license. The aviation industry has informed the school that persons who carry the double license, both FAA and FCC, are sorely needed. Aviation could turn out two-hundred and twenty such persons per year with the additional funding.

It is estimated that costs to run this vocational school are approximately ten percent higher than a similar academic school. These elevated costs are due to factors such as the need for two maintenance machinists who work at the school to keep the shops in operation and the rapid nature of technological progress with which vocational education must stay abreast. With additional funding from sources such as the Carl D. Perkins Vocational Education Act, Aviation High School

would like to fully implement its thirteenth-year-of-school program and provide a recurrent training program for teachers.

Some special grants for equipment come to the school without monies for support structures. Many times when new pieces of large equipment are obtained, new electrical or plumbing infrastructures are necessary. If a school does not receive separate funding for support structures, the equipment cannot be installed. As the school becomes less able to use the more modern equipment, it is always the specializations which are most in demand that suffer. Examples of areas for which highly specialized equipment is needed are the avionics program and the advanced placement physics classes from which students go into engineering careers. These programs are highly regarded by the staff, the students, and the industries which employ Aviation graduates, but they require highly specialized materials, equipment, and infrastructure to maintain the advanced level of teaching and learning.

In general, Aviation High School has been a very successful school which continues to have good student outcomes, and thus a good reputation. It works well in tandem with the aviation industries and related fields to provide top quality candidates for work in a rapidly growing sector of the economy. This mission can continue only as long as resources are provided to support its exemplary programs.

Chicago High School for Agricultural Sciences
Chicago, Illinois

Setting

The last farm remaining in the city of Chicago was preserved in a flurry of controversy and fanfare with the opening of the Chicago High School for Agricultural Sciences (CHSAS) in 1985. The school not only provided a way to continue the use of this famous 72.6 acre tract of land, but it also provided a unique opportunity for students from all parts of the city to learn about and experience agricultural science, a subject which is not common in urban schools.

The CHSAS is a magnet school located in the Mount Greenwood neighborhood of Chicago, quite close to the southwestern border of the city. It is in a residential area of private homes with small commercial ventures located on the main streets.

The atmosphere of the CHSAS is pleasant because the staff and students make it so. A group of photographs displayed on the school walls make obvious the pride they have in the school with its central courtyard and neighboring farm stand. The classrooms in the rectangular building are light and modern. The windows look out on areas of lawns, parks, and the land laboratory. Sunlight streams in during the early morning and late afternoon, but shades and/or air conditioners in the rooms make the heat and sunlight bearable.

The walls are free of graffiti and efforts are made to keep the floors free of debris. The crowded conditions under which the school must operate are painfully noticeable in that there is little empty space within the interior of the school. The emptiness of the main corridors fills to the brink as the bells ring and students and teachers surge out of classroom doors.

The offices of the guidance department, the administrators, and special personnel are filled with file cabinets, the overflow papers from file cabinets, and unopened boxes of papers and materials for which there is no space. Large musical instruments used by the band have to be stored in the principal's office. Physical education is taught in a classroom where desks and chairs are moved aside. In many instances, equipment must be moved from place to place. For example, the library, which seats forty-four people, must be used to store large audiovisual equipment thus blocking a wall of bookshelves. If students or

teachers need books from that side of the library, the equipment must be rolled to one side where it blocks other shelves.

The school has four levels of students (freshmen through seniors) for the first time this academic year, 1988-89. Portable classrooms are being used to accommodate the student body of 467 students. These five mobile units are parked directly in back of the main building.

A storage shed holds much of the machinery needed for the land lab. The students have recently painted the roadside farm stand near the school, which they operate themselves during the summer months. A greenhouse, displaying plants at various levels of development, is attached to the back of the school. Nearby, a small area has been sectioned off to house the rabbits, each of which has been assigned to one student for its care and feeding.

Stretching for seventy-two acres behind these buildings is Chicago's last farm—open, cultivated land with a small clump of trees off to the side. This resource has become the high school's land laboratory. Plans are underway to develop the acreage as a learning lab for the entire city. Eventually it will contain an arboretum, a pond, test gardens, nature trails, and even a three-hole golf course to teach students turfgrass management. These resources will be available to elementary school classes and to the public on weekends.

Development of the School

The late Mr. Joe Martin, a longtime resident and historian in the Mount Greenwood community, and other residents of the area who wanted to save the city's last farm were glad to see the school system appoint a task force to explore the possibilities for the site in 1983. The task force, the community district superintendent, and members of the community worked together to develop the idea of placing a high school program there. Plans were drawn up to use the existing building, a former elementary school, and to use classroom space at a neighboring high school three miles east of the site.

Consultants were hired beginning in 1983 to lend their interest and expertise in various areas of agricultural education. A principal was appointed in 1984. Together they planned the CHSAS as a new type of innovative high school. Architects helped them to plan the renovation of the elementary school building. The principal and the consultants read feasibility studies, visited the only other high school for agricultural science (in

Philadelphia), attended vocational education conferences, and discussed the direction in which the curriculum should be developed. Teachers and other staff persons who would understand and contribute to the pioneering ethos of the new school were hired. Applications for faculty positions were received from around the country.

With diligent work in a short amount of time, a positive public image was developed for the school. The greatest barrier to overcome was the name of the school. "Agricultural Sciences" meant farming to most people. The staff had to explain that twenty percent of the jobs in the United States are related to agriculture and that agricultural science includes two hundred different careers. The newly hired personnel for the CHSAS met for eight weeks before the opening of the school. They explained the school's mission to people at the central Board of Education, in the elementary schools, in Chicago neighborhoods, and to leaders in businesses and organizations concerned with attracting young people to agriculture-related careers. Several central board administrators and school board members were convinced the school would work and be a credit to the needs of Chicago students.

Dignitaries and interested parties from the Chicago area and across the state were invited to be members of the Agribusiness Advisory Council to the General Superintendent of Schools, which would advise the school and the superintendent on matters concerning agricultural education. Most of the invitees accepted the positions. The people who declined membership sent letters of support wishing the school well and acknowledging the need for such an educational program.

As the principal recruited students for the CHSAS, many parents bought into the concept and mission of the school. They saw it as a small safe environment for their children. Some liked the newness of the idea. However, many asked, "Why should city kids learn about agriculture?" The school staff began to demonstrate to the many "nonbelievers" that there is a lot more to agriculture than farming. Over five hundred students applied to the new CHSAS.

The first semester of 1985 began with one-hundred and twenty students in seven classrooms with additional facilities such as the gymnasium and cafeteria located at the neighboring high school. Shuttle busses ran between the two schools so that students could take academic subjects, lunch, and physical education and then be transported to the CHSAS site for their agricultural science classes. By the second semester, the split site

made it difficult for students and teachers to develop a sense of belonging to the new school, and for academic and specialty teachers to come together in curriculum development. As a result, the shuttle arrangement was discontinued and the students remained at the CHSAS all day.

During the second year, when the school had both freshmen and sophomores (237 students), the school again had to use space at another site. A community college about five miles away allowed the school to use a small building. Teachers again felt a sense of disjointed participation. Those who had classrooms at the college felt left out of many events at the school.

The opening of the third year, 1987-1988, was the first full year all components of the school were together at the appointed site. For a time the freshman, sophomore, and junior classes had to be squeezed into one wing which had been the original elementary school. With the opening of the $1.3 million addition, however, the school became more normal in its operation. A new principal was appointed who continued the mission and goals the founding principal had begun in the first two years.

Climate

The relatively small size of the CHSAS engenders an air of relaxed teaching and learning. The uncomfortableness of the overcrowding is tolerated in classrooms because, in spite of it, students have encouragement from the staff and ample materials to carry out their lessons.

Even in classes where students are to have a hands-on experience, the organization of students and materials along with the excellent teaching skills allow for both individualized and group instruction. For example, the computer room contains six stations, most of which have five computers and a printer organized in a pentagonal shape. Each student has his or her own working space, but all of them are close enough to one another to lean over for help. As they work independently they confer with each other about various computer techniques and about their assignments while the teacher checks students' work and gives individual attention to those who need it. When the teacher sees that there is a common mistake which students are making, he stops the action, gets everyone's attention and discusses the concept or technique with the entire class. The atmosphere is busy, productive, and conducive to learning.

At times, the small size of the school helps to calm individual and group situations which, in other schools, may lead to disruption and sometimes violence. The CHSAS is located in a neighborhood in which some hostility exists toward the minority group students who constitute a majority of the student body (sixty-seven percent Black and twenty-two percent Hispanic). If potentially explosive incidents occur outside of the main building it is likely that some student or staff person will see it brewing since the school is on one level with windows all around. If trouble occurs within the building, students and staff members do not have far to go to inform the administrators.

Thus, even though the school seems to have less of a security presence than others (i.e., no uniformed officers, no checking of visitors' identification), there is closer monitoring and a shorter response time when attempts are made to eliminate disruptive incidents. Teachers do not have specific hall duty assignments, but they monitor areas adjacent to their classrooms. Many teachers must change to another classroom between periods, which means they are walking through the corridors at the same time the students are changing classes.

This aspect of the school organization works not only for security purposes. It also fosters positive ties between students and teachers and allows for more freedom of movement. Because the school is small and because the same people see each other so often within this small space, teachers get to know more of the students, including ones who are not specifically assigned to them. Students who are new to the school learn the names and roles of the staff members very quickly. Therefore, teachers can give much more leeway to these students than they would to students in other schools. An excursion out of a classroom (with a pass) to get homework from a locker or to look for materials in the library is more allowable because other staff members know the student and there are fewer places for the student to "get lost" for a while.

The interpersonal climate in the school is warm between teachers and students and among faculty and administrators. One teacher described the interaction this way:

> Each student usually has a favorite teacher. When that teacher perceives this, he/she takes the student under wing. The teacher fosters the relationship by talking to the student informally as the chance arises. They also keep in contact with the parents. If difficulties arise with academic work or behavior, that teacher speaks to and for the student.

Other teachers are aware of these mentoring pairings, thus they know what staff member to contact if there are questions about a certain student.

The presence of the land lab and the farm stand add a unique aura to the school. Fresh displays of flowers, pumpkins, and other plants which have been grown at the site and arranged by the students are placed in the school offices. Visitors to the school such as members of the local flower club are seen admiring the landscaping students have done in the central courtyard. Students discuss the taffy apples and wreaths they made as they calculate the grand total of sales made at the recent Fall Festival. The administrators decide to have a pumpkin giveaway so that the extra pumpkins will be put to good use by pupils at an elementary school. These scenes and activities make the CHSAS strikingly different from other high schools in large urban areas.

Students

When asked the question, "Why did you come to this school?" most CHSAS seniors and juniors mention that they were intrigued by the newness of the program. Many of them needed help relating what the school teaches to what they needed in terms of education. Once the links between science and agriculture were pointed out and once they understood the wide range of career options available to them, they liked the idea of attending the CHSAS.

As they began to experience what the school had to offer and they compared it to the experience of their friends in other high schools, they came to know that the relatively small enrollment and staff make the school more conducive to learning. They understand the value of having close working relationships with teachers, counselors, and administrators. They enjoy feeling empowered to propose new activities for the school. Many of the students have ideas for extracurricular and fundraising events. They are confident they will get faculty support.

Thus the school has become one of preference even for students who do not give a high priority to agricultural education as an end, but who use it as a means to branch into some other career area or to get a good high school education which will help to assure success in college. They appreciate the fact that the school prepares students for careers related to agricultural science and for higher education. Several of the freshmen said they have siblings who attend the school. Two freshmen said they have a parent who works in

the school system and the parent recommended the school. This demonstrates the amount of confidence the school has generated within families who have knowledge of what it has to offer.

Increasing numbers of applications to the CHSAS are making the student selection process more arduous. Some outreach activities are conducted in elementary schools each fall and applications are distributed. An open house is held for eighth graders and their parents. As the completed applications are returned, the faculty and administrators of the school interview and screen the prospective students.

The students selected for enrollment at the CHSAS come from all parts of Chicago. They represent a broad range of ability levels, although students with low grades in mathematics and/or science are often denied entrance. The criteria for acceptance include attendance and report card grades. Some students who have learning disabilities and some who need help with English as a second language are accepted. A staff position is allotted to each of these areas.

The attendance records of prospective students are an important factor for acceptance since the school is located at an extreme end of the city and students may have far to travel. Efforts are made to accept students from all ethnic groups and to maintain a fifty percent female enrollment. Competition from local parochial schools makes it difficult for the CHSAS to recruit students from the surrounding neighborhood and to meet the required fifteen percent minimum of white students. Generally more students are selected than can be accepted. A lottery system at the high school district offices determines the final list of students to attend the school.

The students who are accepted attend an orientation during August where they learn more about the curriculum, the physical plant, and the high expectations the faculty will have for them. The guidance staff organizes this orientation. It includes field trips, advice about study skills, information about the program of study and career opportunities, and preliminary strategies about college admission.

Many students complain at first when they hear of the exceptionally long hours they must spend in this high school. Some students attend from 7:05 a.m. to 4:19 p.m., some must travel two hours on public transportation, and the lunch period is only thirty minutes. But most students admit they learn more because of the extra hours spent in school. One of

the key accomplishments of the CHSAS has been its low dropout rate which is less than two percent compared to 44.9% citywide. The attendance rate of ninety percent is above the citywide average.

Mission and Curriculum

The school successfully combines the findings of research on effective schools with knowledge of the need for more relevant broad-based career education. This combination means that the CHSAS has an overall mission which its staff and students know and embrace. They feel a particular attachment and a sense of oneness in carrying out the mission. People at different levels, that is, parents, students, staff persons, and administrators, all feel empowered to contribute to the implementation of the goals of the school.

From the beginning, there has been good administrative leadership and a caring staff. An academic climate has prevailed in a nurturing atmosphere which allows students to progress intellectually and socially. The framework around which the courses have been organized is oriented toward the future.

The mission statement, developed by the first principal and faculty of the CHSAS, emphasized providing all students with sufficient depth and breadth in their knowledge and skills so that they will qualify for advanced technological studies, for entrance into college, and/or for entry level jobs. Such preparation is meant to fill the gap in high school level education caused by a lack of instruction related to agriculture. It stresses the need for classes in agricultural sciences to include hands-on experiences and practical applications, in addition to all the academic classes needed for college admission. These aspects of the CHSAS mission and curriculum maximize the chances for student success.

A most interesting feature of the CHSAS is its ties with the National FFA Organization (formerly Future Farmers of America). A strong connection between the organization and the school is maintained and fostered by the following factors: (1) all students are expected to join and to become active members of the organization; (2) the FFA serves as the student council of the school; and (3) the handbook, manuals, and materials developed by the organization have been adapted to meet the needs of urban students and are integral parts of the required course entitled Agricultural Careers and Leadership which all CHSAS students must take in their freshman and sophomore years. Many students in the school become deeply involved with the organization on local, regional, and national

levels. They participate in state and national conferences, competitions, and other activities.

For example, a few of the students told of their involvement in the organization as school officers and as program participants. As officers, elected by their classmates, students attend meetings with teachers and administrators of the CHSAS to talk about school procedures and problems. They feel they are respected and that they are truly a part of the decision-making process for the school. Students who participate in FFA programs have had opportunities to explore careers related to agriculture, to participate in community service activities, to develop their oral skills through public speaking, and to compete for scholarships.

Close ties with outside organizations, which are fostered and monitored by the faculty at the CHSAS, allow the major mission of the school to be carried out at the school site and in the broader arena of national involvement in agricultural science. They also provide a host of extracurricular activities in which the students may participate.

Teachers are eager to demonstrate the natural ties agricultural education has to other subjects in the CHSAS curriculum. In the agricultural science classes, students are taught lessons on the "geometry" of planting, the "art" of landscaping, the "science" of crops, and the "communication needs" of dealing in the broad arena of agriculture. At one staff meeting, the teacher of the Agricultural Leadership classes made a presentation to other faculty members about the goals and activities of the course. He reported on plans to use literature in his classes to help students develop the vocabulary needed for agricultural leadership.

In a physics class, a teacher combined physical science with computer science by introducing the use of computer software for demonstrating physics problems. As the class worked on a written assignment, the teacher called two students at a time to the computer to show how the software could be used to draw vectors and to check the answers to problems the students had completed. Examples such as these are numerous at the CHSAS where teachers and administrators continue to create opportunities for articulation between academic and career-related subjects.

The curriculum at the CHSAS has been and continues to be developed by the entire faculty. This development began before the school opened; whereby a tentative curriculum

was written and put into practice for the first year. It outlined the goals, skills, and concepts for each course. The general design of courses gives freshmen and sophomores an orientation into all areas of agricultural science. In the junior and senior years students specialize in a related area such as horticulture, agribusiness, food science, or agricultural mechanization and technology.

In addition to the comprehensive course load in agricultural sciences, the school stresses mathematics and science, requiring students to take three years of both. A fourth year of mathematics, a course in calculus, may be elected by the students. A year of computer education, two years of a foreign language, and four years of English and physical education are also required.

All classes are heterogeneously grouped and the program of study is similar for all students. The few electives which exist are in the junior and senior years. Honors credits can be earned for some classes in which teachers have identified special assignments and activities which take the honors student beyond what is normally expected in the class.

The major features of the curriculum are as follows:

- The incorporation of agricultural sciences into all subjects.
- A required course on career awareness.
- Eighty minute periods of instruction.
- Two or three courses in agricultural science each year, some of which are application courses such as Food Science and Agricultural Mechanization and Technology.
- A summer course which gives students hands-on training and experience in work positions related to agriculture.

The summer courses and internships are quite popular with students. Several of them described the pleasure of spending the summer in internship experiences at universities in Illinois, Michigan, Missouri, and Alabama where they participated in activities such as working in laboratories, assisting veterinarians, and working on land laboratories. Some students worked as aides to veterinarians. Others who attended the summer program at the CHSAS site enjoyed landscaping, harvesting vegetables, and making cakes and pickles. Some of the students get paid for these experiences. They keep diaries about their work and receive half of a high school credit. Much of the produce and products from these activities are entered into contests.

Competition seems to be an unwritten element infused into the curriculum structure at the CHSAS. Much of the anecdotal material students contributed was about their participation in competitions. One student told of her elation, and fears, in being part of a national talent show sponsored by the FFA. Another showed her method for studying for a horticulture contest. A teacher spoke with enthusiasm about a science competition in which students from several Chicago high schools participate. It requires each student to build a bridge from about one ounce of materials (balsa wood and glue). Students must use their knowledge of physics to build the strongest bridge possible. The bridges are tested for strength by adding weights to them. As bridges collapse under the weights, students are eliminated from the competition. The student whose bridge holds the most weight without breaking is the winner.

These types of activities heighten competition among individual students and between schools. They add to school spirit and the students' feeling that they are encountering a special sort of high school experience. This makes up, somewhat, for the lack of sports teams at the CHSAS. A few students expressed dismay that the school does not have a competitive football or basketball team, but they do enjoy lending support to the track team. They are hopeful that several runners may qualify to participate in the state track meet.

For each year the school has existed the faculty has evaluated the curriculum and the activities offered at the CHSAS, pulling them in line with what the students need. Now that one class has almost completed the four year program, a reevaluation and revision will be done considering the experiences of the first four years. School staff and students are confident that the school has done an exemplary job in developing the CHSAS curriculum and carrying out its mission. Although there are students of all ability levels in the school, the test scores in reading and mathematics have been consistently higher than the citywide average and more than a dozen seniors have been accepted to four-year colleges with scholarships by the second month of their senior year in high school.

Students who have difficulty with a course may ask for a peer tutor. The peer tutoring component of the school offers payment to students for helping other students with a course the tutor has already passed. An attempt is made to find a tutor who had the same teacher for the course. Students who need extra help in mathematics can also obtain a tutor from the Math Club.

Staffing

The forty-three staff members at the CHSAS, including administrators, faculty, and support staff, represent many Chicago neighborhoods and ethnic groups. Two staff members mentioned that they enjoy working at a school which is in their neighborhood. Several others had been teaching at other schools in Chicago and "wanted to try something new." Still others came on board because of an interest in and/or experience in agricultural science. Present staff members agree that the school attracts people who want a teaching experience which is out of the ordinary for urban high schools.

The organization of the staff at the CHSAS is more informal than at other schools. This is necessary because of the experimental nature of the school's curriculum and the small size of the staff. Departments for subjects such as English only contain three to four people, therefore there is no need for a department chairperson. Thus, the school maintains, for the most part, a flexible departmental organization.

On the other hand, the agricultural science department is the largest. For this subject area there is a master teacher with no teaching duties who handles the curriculum development, FFA activities, and other matters for the department. He acts as a liaison between the CHSAS and various agriculture resource agencies.

Academic teachers at the school are able to obtain an agricultural science endorsement added to their teaching certificates. For this they must take college courses in agriculture and related areas. Often professors of agricultural education come to the CHSAS to teach these courses after school; in other instances the CHSAS teachers go to universities for these extra courses. The endorsement gives them some background and understanding in agricultural education and protects their positions as permanent teachers for the CHSAS. The agricultural science teachers have an agricultural science certificate—a new certificate which had to be created by the Board of Examiners.

Inservice training for the faculty, coordinated by the master teacher and the administrators, helps to strengthen the links between the academic areas and the agricultural science classes. One afternoon session began when the students were dismissed early and the faculty and staff met informally over lunch. A speaker had been invited from the University of Illinois to discuss acid rain. The presentation included a filmstrip and a question/answer session. The day was profitable for all in terms of developing staff camaraderie and cohesion, informing all teachers about a subject of concern to

agriculturalists, and for allowing time for the principal and teachers to meet during regular school hours.

Linkages

In addition to its strong ties to the FFA organization, the CHSAS is linked to many other agencies and associations which aid the school by giving resources, information, and opportunities for interaction in local and regional events.

For example, students from the CHSAS demonstrated their skills in landscaping at a demonstration sponsored by the National Junior Horticulture Association. Some also served on a corps of ushers which guided visitors through the exhibits. Joint projects and the exchange of information take place with local colleges and universities and the Illinois Association of Vocational Agriculture Teachers. The Chicago Board of Trade has adopted the school and has carried out numerous activities such as providing teaching materials, providing summer jobs for students, and giving students from the school visitor access to the floor where commodities are traded. Articulation with the Agricultural Education Department at the University of Illinois at Urbana-Champaign has helped the school to develop its curriculum offerings and to understand the needs of the food and fiber industry at local and national levels.

The Agribusiness Advisory Council to the General Superintendent of Schools continues to provide a steady articulation between the school and the business community. The ten committees of the council offer advice and support in areas such as the horticulture industry, an anticipated animal laboratory for the school, and ways to acquire the $14.5 million funding needed for the expansion of the CHSAS to a school for one thousand students.

The involvement of sixty-five percent of the CHSAS parents in the Parent Teacher Association provides a strong link between the school and the community. Staff members at the CHSAS feel well supported by this group. Some parents have commented that having a child in the school is like getting a private education free of charge, so they are generous in their financial donations. The Parents 100 Club, which was formed in 1986, encourages parents to contribute $100 per family instead of conducting fundraising activities. Support is also given in terms of time and energy as the parents attend field trips and other school activities and when they write letters to the Board of Education in support of issues relevant to the school.

Issues

Unlike many of the other schools studied, the CHSAS does not seem to have a problem with obtaining up-to-date materials and maintaining existing equipment. The books and materials are well suited for the curriculum the way it stands. For the more complicated operations planned for the future site such as in the area of food science, thousands of dollars will be needed for specialized equipment.

The major problem in this school is one of space—not only space for instruction, but also storage space and places for nonacademic activities such as physical education, guidance, extracurricular activities, and teacher planning and conferencing. Space is the school's most serious unmet need.

It is estimated that the additional facilities which will provide a more appropriate space for the school and allow the enrollment to expand to one thousand students will cost fifteen to sixteen million dollars. Plans are underway for the construction of this facility but getting started is an issue since this is the first time a United States high school will be built with private funds. The school staff and the community of supporters hope that the school system and the State of Illinois will agree to the selling of private bonds which will become payable by the State upon maturity.

Another issue which arises in this exemplary program is the amount of time students spend in nonclassroom activities. There is some debate among staff members as to the extent to which participation in numerous out-of-school activities is positive or detrimental to students' progress. There is no evidence that the students are missing out on learning as a result of the activities, but there are numerous and varied activities which do take CHSAS students out of the classroom during school hours. These include competitions and exhibitions which are part of the ties with agricultural organizations and many field trips to agricultural sites, businesses, and colleges which offer agriculture-related programs. This especially affects the seniors, some of whom participate in three or four such activities per month.

The debate is related to some of the fundamental issues which concern the way exemplary vocational education is best delivered. In one sense, it is reasonable to expect students to spend as much time as possible in the school where exemplary programs take place in order to maximize their contact with good teachers and up-to-date materials. On the other hand, there is merit in exposing students to as many educational experiences as

possible whether they are held inside or out of the school. Out-of-school activities add breadth to the students' knowledge and prepare them for operating in the outside world.

Conclusion

The exemplary nature of this school is apparent by observation and by consultation with persons in the school and in the Chicago Public Schools District. The principal notes how genuine the success of the CHSAS is in light of the fact that there has not yet been a graduating class whose records of post-high school achievements can be documented. She says,

> We have made our success on the interim items such as the position we hold in the community . . . our commendable test scores . . . and the high placement of our students in city . . . and national . . . competitions . . . .

She feels that the local, regional, and national perception that the school is exemplary helps it continue to succeed. In other words, past success is a contributing factor in future success.

The two factors mentioned most often by other staff members as contributors to the school's success are: (1) attracting a group of motivated students and developing that motivation as the students proceed through the school; and (2) the support and freedom the school receives from the business and education community. The following quotes from the staff at the CHSAS summarize the way in which these two factors are perceived:

> The first administrator and staff had a vision. They put together the right people to promote the vision to the community, and the school received great support . . . the advisory counsel and the university involvement help us to know what to teach our talented student body . . . everyone bought into the concept . . . .

> . . . the setting is part of the success, but the process will work elsewhere if the same ingredients are present . . . the freedom within the system to do what you want . . . a parent organization [which will] demand that freedom [but which will] feel free to tell us where we are wrong . . . and [our] never accepting the fact that we wouldn't be a successful school . . . neither staff nor students would accept not fulfilling the goals we set . . . we should never feel as though we have finished . . . .

High School of Fashion Industries
New York, New York

Setting

The hallways at the High School of Fashion Industries were buzzing on a fall day in 1988 after a newspaper article disclosed that Mayor Koch was proposing that high school students in New York City be required to wear a school uniform. What's more, it stated that students at the Fashion High School would be asked to design several alternatives for such a uniform.

The students were verbal in their opposition to the Mayor's proposal:

"We need to express our individuality at this time in our lives. Uniforms would make us all alike."

"Students in this school should be exempt from the rule. We need to make a fashion statement."

"It will hurt the fashion industry if students are forced to wear uniforms. Teenagers spend a lot of money on clothes—that's what part-time jobs are for."

These comments illustrate the strong commitment these young people have to the specialty focus of their high school.

The High School of Fashion Industries was identified as an exemplary school because it meets the needs of urban youth in a unique way. Some say the school's attraction lies in the glamor evoked by "fashion design," while others say it is because it is the only school of its kind in the United States. It is also the only high school in the United States to award a technical diploma in fashion.

In any case, the exemplary qualities of the school include its high attendance rate (eighty-six percent) and low dropout rate (six percent). The school was also recently rated among the five safest schools in New York City.

Another measure of the school's success is its ability to prepare students for college as well as for careers in the fashion industry. "The academic skills students get here are just as good, if not better, than those they would get in another high school," emphasized an assistant principal.

A high percentage of students pass the Regents exam each year. In June, 1988, eighty-five percent of the graduates went on to postsecondary institutions. About half of the graduates are now enrolled at the City University of New York and another twenty percent are attending the Fashion Institute of Technology, Parson's, the Rhode Island School of Fashion Design, and other colleges with a fashion focus. The remaining thirty percent are enrolled in other colleges and universities within and outside the State of New York.

The school succeeds, according to faculty and students, because of the common interest in fashion shared by all and because of a motivated and interested student body. Other factors that account for its success include a faculty that cares about students and an environment that is safe, orderly, and conducive to learning.

Students must apply for admission to the High School of Fashion Industries. Over three thousand students apply each year for the eight-hundred and fifty seats available. Selection is based upon results of an art examination. Students who are selected feel they are special, and indeed they are since so many students apply for admission. An esprit de corps develops immediately among students because they all share a common interest and because they were all selected for the program.

Student interest in the specialty area carries over into other subjects as well. Although the students are somewhat average in ability, their level of motivation is high. They are involved in something they really like. "The kids really enjoy what they're doing here; they have a feeling of success," explained one staff member. Another echoed that feeling: "Our students tend to perform better because they really want to be here," he said.

Students at Fashion High also know that they have more choices than their peers at other high schools. They have a good chance to get a job in what they're interested in and they can expect to move up the career ladder rapidly because of the skills they have acquired at the high school. They can also choose to go to college because of the good preparation they have received in their academic courses.

Development of the School

The High School of Fashion Industries is a Unit Trade School, meaning that it specializes in only one trade rather than a number of different trades. The school opened its doors in 1926 as the Needle Trade Continuation School. It was located in a loft on 34th

Street, in the garment district of New York City, and its purpose was to prepare students for jobs in the garment industry, which at that time included sewing, cutting, pattern making, and machine operation. Half a million workers were needed in those positions at that time.

As the industry expanded, the various unions put pressure on Mayor La Guardia to open a high school to prepare students for the garment industry. In 1940, funds were obtained to open the Central Needle Trades High School, a new ten-story building which houses the school today. The school is located at the southern edge of the garment district, an area that begins at 34th Street and extends north to 41st Street between 7th Avenue and Broadway. The school's curriculum offered courses in production skills as well as courses in fashion design, millinery, men's clothing construction, and shoe design. A full academic program was also provided to students.

In 1948, the first principal of the high school instituted a thirteenth year of study for students who planned to become fashion designers. This program evolved into the now free-standing Fashion Institute of Technology.

The school's name was changed in 1956 to the High School of Fashion Industries because the curriculum no longer prepared students solely for production work. The school's graduates were also entering the workforce as fashion merchandisers and designers.

The school's current (and fourth) principal has been at the school thirty-six years—first as a social studies teacher, then as an assistant principal, and as principal for the past sixteen years. When he started teaching at the Fashion high school, his principal would send him out to menswear factories to help students get jobs. He became concerned because his students were being employed as sewing machine operators, which were menial jobs in the industry. He asked himself, "What the heck are we doing here?"

When he became principal, he changed the focus of the school. This was somewhat difficult at the start because the industry wanted the school to continue to supply its production workers. The principal explained to them that training production workers was not the sole purpose of the school. "I told them where I stood and I held my ground," he explained.

The industry that used to employ half a million people in production work now employs only one-hundred thousand. The location for the work has shifted to countries abroad where labor is cheaper. The garment manufacturing that is still done on the East Coast is no longer located in New York City's garment district; it is on Canal Street (in Chinatown) or in outlying districts in the State of New York or in New Jersey.

Climate

The school has an orderly and businesslike climate. Students are well-behaved in classes and as they move through the hallways, stairways, and elevators. The halls are empty during class time and discipline problems are minimal. The school is considered one of the safest in the city. The atmosphere is strict but friendly. This is a place where visitors are greeted with smiles from students and staff.

The teachers at Fashion High School believe that their students are more motivated than students at other New York City high schools. They also feel that their students are better-disciplined and nicer than most students elsewhere. They genuinely like their students and consider them more motivated and more interested in school than their peers in other schools. They say that the focus of the school seems to help students develop self-esteem and a positive self-image. For many of these students, this is the first time that they have been able to demonstrate their talents in an academic setting. Especially for students whose first language is not English, the fashion courses provide opportunities for them to excel while they are improving their English skills. "Bilingual students can really benefit from occupational education," reported an assistant principal. Another assistant principal expanded upon this by saying, "Many students here are not very verbal. They have difficulty expressing themselves in conversation or in writing, but they can express themselves through art, design, and the way in which they dress."

Students

Enrollment in the Fall of 1988 was two thousand students, eighty-seven percent of whom are female. School personnel have always had difficulty recruiting young men for the program. Stereotypes abound in the fashion industry, and many youngsters think it is a profession limited to women or homosexual men.

The school's enrollment is predominantly minority, with Blacks and Hispanics comprising ninety percent of the enrollment (forty-five percent each), and Asians and

others making up the remaining ten percent. The majority (ninety percent) of the school's students come from low-income families.

Students are proud of the ethnic and racial diversity of the student body. They are concerned, however, about the small number of boys who select to attend the school. Some of the students think that if the school were to reinstitute the men's tailoring program and the furrier classes more males may be attracted.

Students are also proud of the fact that they are being well prepared for occupations in the fashion industry. One student said, "We are learning skills here that most people learn in college. The program here is comparable to FIT [Fashion Institute of Technology]." Another student concurred:

> When you're here, you're in the 'real world.' In other schools, teachers say, 'Wait until you get out in the real world,' but here, we take field trips and work part-time in the industry, we run the boutique, and we're given more responsibility.

Students believe that their school offers a rigorous program in both the occupational and academic subjects. Transfers back to the zone (neighborhood) school are common during the first year students are in the program. Some students who choose the school think it will be easier than a general high school. They soon find out that it is not. Several students reported, "It's difficult to graduate from this school."

Ability levels of students at this high school are as diverse as the boroughs and neighborhoods from which they come. Many travel over an hour each way to and from school on trains and buses. Parents have either read about the program in the directory published by the Board of Education, or they have heard about the school's reputation by word of mouth. Fashion High School is known as a safe school that prepares students for occupations and for college.

Students are admitted to the school on the basis of an art examination. Those who apply for a major in the Fashion Art program must also submit a portfolio containing ten pieces of art work.

Mission and Curriculum

Faculty and administrators have no difficulty in describing the mission of the school today. They agree that it is twofold: (1) to prepare students for careers in the fashion industry, and (2) to prepare them to continue their education beyond high school.

Career preparation is much broader today than it was when the continuation school was created in 1926. Teachers believe it would be a disservice to the students to prepare them for minimum wage jobs in "sweat shops." The industry has changed, the number of jobs in different segments of the industry has changed, and the school is trying to adjust its curriculum to keep pace with those changes.

Students enrolled at the High School of Fashion Industries must take all of the courses required for graduation by the New York City Public Schools. In addition, they are required to take three years of coursework in their major. As a result, the school day is longer and there are no study periods. The school is now on an eight period day, which was cut back from a nine period day in 1975 for budgetary reasons.

The high school offers six majors under the two broad headings of Fashion Art and Fashion Business. The majors under Fashion Art include (1) Fashion Design, (2) Fashion Illustration and Graphics, (3) Textile/Interior Design, and (4) Fashion Jewelry Design and Manufacturing. The majors under Fashion Business are (1) Fashion Merchandising and Business and (2) Fashion Visual Merchandising and Display.

Students are required to select a major in the ninth or tenth grade. They may switch majors up until the start of the eleventh grade, at which time they may make no further changes. This insures that students will have at least two years of instruction in one occupational area. Of the six majors offered, eighty percent of the students have selected Fashion Design or Fashion Merchandising and Business.

Every student, regardless of major, is required to take several art courses. The school also offers Spanish and Chinese bilingual programs, and provides for special education youngsters, most of whom are mainstreamed into regular classes.

Three support programs are especially useful to students. They are peer tutoring, the mentor program, and peer counseling. Students who are having difficulty in any subject can stay after school for tutoring by another student under a teacher's supervision. The mentor program matches upperclassmen with freshmen as a way of helping ninth graders adjust to high school life. The peer counseling program was initiated by a very talented and dedicated English teacher who was concerned by the multitude of problems students face that are not school-related, but have an impact on how the student does in school. She has trained students in her Senior English class to provide counseling to troubled students in

lower grades. Some of the problems these students face include neglect, abuse, alcoholism in the home, divorce, poverty, and other urban ills. Each senior is paired with a younger student who is dealing with a problem or situation similar to what the senior has encountered in his or her own life. The English teacher is training other teachers this year so that more students can participate in the program.

The school provides opportunities to students of all ability levels and an effort is made to minimize tracking. Although students are grouped heterogeneously in their occupational classes, there is ability grouping in math classes. The English classes have students of mixed ability levels, except in the highest and lowest groups (i.e., Advanced Placement and Remedial). Regents level courses are available for any student who wishes to take them.

When the high school opened in 1940, an effort was made to integrate academic and occupational offerings. The principal said that when he was a teacher in the school, students in his social studies classes were required to produce a period costume. Other academic teachers also worked at incorporating fashion topics into their courses. The fashion courses, in turn, required students to use a good deal of math in designing, measuring, and constructing garments.

The amount of integration of subject areas has diminished since the state has added requirements for the Regents diploma. The academic teachers now adhere closely to the standard curriculum so that students will be able to pass the exams.

Occupational Courses

As mentioned earlier, Fashion Art and Fashion Business course offerings cover each of the six majors: (1) Fashion Design, (2) Fashion Illustration and Graphics, (3) Textile/Interior Design, (4) Fashion Jewelry Design and Manufacturing, (5) Fashion Merchandising and Business, and (6) Fashion Visual Merchandising and Display.

Students not only learn skills in the classroom, they also put those skills to use in real-life projects. For example, the students in Fashion Visual Merchandising and Display are responsible for designing and setting up the school's display windows on the street level. They are also responsible for displays in the school hallways, and in the school's student-operated boutique and school store.

The students in Fashion Merchandising and Business also have real-life experience in working at the boutique. They conduct product interest surveys and marketing analyses, order merchandise, learn how to buy in wholesale markets, determine retail prices, advertise their merchandise, keep books, and learn how to deal with the public.

Students in the Fashion Design major are involved in a yearlong process that results in original student designs that are constructed and modelled by students in the annual fashion show each spring. The garments are then purchased by the students who created them (to cover the cost of materials) or sold in the boutique.

Student interest and involvement is high in these occupational courses. Students gain satisfaction as they see their skills improve and as they are critiqued on the products of their work.

The instructors of these classes, for the most part, have worked in the fashion industry before going into teaching. For many of them, however, it has been a number of years since they were involved in that industry.

Academic Classes

English classes at Fashion Industries High School cover material specified in the Board of Education curriculum guide. Regents level courses have more requirements than do regular courses. The assistant principal for English, Foreign Languages, and Social Studies is helping teachers in the English department use more effective teaching strategies in their classes. He uses a booklet issued by the Board of Education that summarizes current research and makes recommendations for practice. Teachers are encouraged to modify and adapt their instructional strategies accordingly.

Monthly inservice meetings are held in the math department. The assistant principal works with his teachers to promote a positive attitude toward students. He emphasizes the advantages of providing positive, rather than negative, reinforcement.

When asked how students are grouped for instruction in science, the head of the science department responded, "In a way we track students, and in a way we don't." As an example, he explained that the Honors Program offers Regents Biology to ninth graders. Students with ability can enroll in this class even if they are not in the Honors Program.

In describing efforts to incorporate fashion in English classes, the assistant principal gave examples of a teacher using a fashion article from the newspaper in teaching students how to read nonfiction. Another English teacher had students draw pictures of the fashions worn by the characters in the novel *Pride and Prejudice*.

Yet another example of integration was seen in a World History class. In this class the teacher talked about the climate and crops raised in South America. He discussed various types of sheep and the kinds of wool used by the fashion industry to make coats.

Art courses are also well integrated with fashion topics. In one art history class, the teacher was taking students through a set of photographs of decorative furniture. Students were asked to design a piece of furniture using decorative elements of a given period. In another art history class, students were designing masks using principles of color and design that they will need in their fashion courses. Both instructors taught art history by allowing students to create their own products in the style or manner of the period or era being studied.

Staffing

The faculty includes one-hundred and fifteen teachers, about half academic and half occupational. Many of them have taught at the school for twenty years or more. There are seven assistant principals, five of whom teach one class a day and serve as department heads for their subject area or a number of subject areas. Few teachers apply for transfers to other schools.

For the most part, teachers work together cooperatively. There appears to be a mutual respect between the academic and occupational teachers. In the science department, new teachers are paired with a master teacher in the occupational area. The assistant principal explains, "A demonstration lesson in a trade area is the same as a demonstration lesson in science or mathematics." He believes that good teaching transcends subject matter boundaries.

Another example of cooperation is seen each spring when the school's fashion show takes students out of class to prepare for the event. The academic teachers understand that the fashion show is an important learning experience for the students.

Linkages

The school has several strong linkages with business and industry. The principal has assembled an impressive group of industry leaders to serve on the Fashion Crafts Educational Commission, which is the advisory board for the high school. The Commission has sixty-four members, fourteen of whom serve with the principal on an Executive Committee.

The advisory board has been responsible for developing an internship program in which seniors work half-days in industry and receive course credit. The Commission has also established a scholarship program by which any student in the school with an eighty-five average is awarded $150 per year ($200 if the student is a senior). This small scholarship provides money for students to purchase supplies needed in their fashion classes. It also provides recognition to students who are doing well academically. In 1987-88, approximately eighty-five students were eligible for these scholarships.

The Commission also provides speakers for the school, arranges field trips to the industry, and assists with the critique and selection of student-made garments for the annual fashion show. At the time of the site visits to the school, the advisory board was gearing up for its annual dinner dance to raise money for the scholarship fund. One of the members of the Commission's Executive Committee was at the school to judge the fashions that would be modelled by students at the dinner dance. In the spring, Liz Claiborne comes to the school to judge the garments created for the fashion show.

Students in the Fashion Merchandising program are assisted in obtaining part-time jobs through the school's partnership with Bloomingdales, B. Altman, and other department stores in New York. Bloomingdales adopted the school in 1986. Another program is available to seniors who wish to attend school in the morning and work at a paying job in their major field in the afternoon.

Faculty believe that students are well prepared to enter postsecondary institutions that specialize in fashion design. In fact, some feel the students are too well prepared. Those who enter the Fashion Institute of Technology are frequently bored with their classes because material is a repetition of what they already learned in their high school classes. Attempts have been made by school staff to get administrators at the Fashion Institute to give credit for courses already taken at the high school, but those attempts have not been successful.

Issues

- *Equipment and Materials*

  Funding is a big issue here as it is in most other vocational high schools. The fashion industry has made some major changes with which the school has not been able to keep up. For example, the dressmaker forms used for draping garments change each year in the industry, but the forms used in the school were purchased in 1975. Due to their cost ($425 each) they cannot be replaced often. A Computer Assisted Design (CAD) system is also needed for up-to-date instruction, but funds are not available to purchase one.

  Books and instructional materials could be improved in some classes. Consumable supplies are one of the largest expenses at Fashion High, but the Board of Education provides only 50¢ per student per month. As a result, students must purchase their own materials or teachers have to ask industry for donations of fabrics and other items.

- *Staffing*

  Another concern is finding competent teachers in the occupational areas. The school has a stable, but aging, faculty. For example, the two assistant principals for occupational education have been at the school for twenty-seven and twenty-three years respectively. Many other teachers have spent most, if not all, of their teaching careers in this school. When faculty members in the occupational areas retire, there is concern about finding good replacements.

  People in the fashion industry make a good deal more money than they would in teaching. Making a permanent full-time move to teaching at Fashion High would mean having to take sixty-two college credits, thirty of which must be in education, as well as taking a substantial cut in pay. However, there are professionals who may be willing to come in and teach one class a day. The principal would like to hire them as part-time teachers, but the union contract will not allow him to do so. One assistant principal said, "We are so unique, we should have the right or privilege to hire people in the industry part time."

  Part-time instructors from the fashion industry would solve two problems: one of staffing and a second of staying current. Those who are working in the industry have a great deal to share with students and they lend credibility to what they say

about requirements for success in the occupation. Care must be taken, however, to ensure that these individuals learn about teaching principles and methods, and that they care about young people. Subject area specialists alone do not make effective instructors.

Teachers of academic subjects are also difficult to recruit. The Board sends teachers to the school rather than allowing the principal to interview and select the teachers. The principal said, "I have to accept people I wouldn't want teaching my own children."

Staff development is also an issue at Fashion High School. The monthly forty-minute departmental meetings are inadequate at a school of this type. Occupational teachers, many of whom have not worked in the industry in decades, need opportunities to learn from those in the industry. Summer internships would work best for these teachers, given the demands on their time during the school year. A limited attempt at staff development has been made with Bloomingdales offering half-day visits to occupational teachers, but this field trip approach is not enough. It is extremely important for teachers to stay current with what the industry is doing in order to prepare students for occupations that will not only allow them to get jobs at the entry level, but will allow them to move up the career ladder. One assistant principal believes that teachers who are on sabbatical or other leaves should be required to take their leave working within the industry.

- *Graduation Requirements*

One of the assistant principals in the academic area is concerned about New York state's "very strong academic push," which he believes is beginning to wipe out occupational courses. When Regents requirements are added to the curriculum, specialty courses are cut. He feels that some compromises must be made to accommodate both kinds of courses, since the combination is what makes this school so effective.

Even the summer program for incoming students has shifted direction because of changing statewide priorities. Incoming students in years past were introduced to the fashion specialty during the summer, but now the emphasis is on basic skills, which one of the assistant principals calls "deadly skills." He feels that they have

taken the fun out of the summer program. He also expressed concern about the push toward more academics:

> Rather than looking at successful vocational schools, they put us into an academic mold. We have better success than those schools; we're proud of what we're doing, but they keep taking away rather than adding. We need a longer day. We may even need a five-year program.

- *Class Size*

  Currently class size reaches the maximum permitted by the teachers' union contract—thirty-four students in academic classes and twenty-eight students in occupational classes. This is too large, especially in the occupational areas where individual student projects require one-on-one assistance from the teacher.

- *Physical Plant*

  The Fashion Industries High School is housed in a ten-story building, which has an impressive art-deco entrance with marble floors and ceramic tiles. Also on the main floor is an auditorium with a mural painted in the 1940s by an artist commissioned by the school's Advisory Board. When you leave the first floor, however, the school's physical plant is depressing. The classrooms and hallways have not been painted since the building was constructed in 1940. Plaster and peeling paint fall from the ceilings and walls in a slow but steady rain. The school is free from litter or graffiti, but the grimy walls, falling plaster, and old furniture make it a depressing environment in which to teach and learn.

Conclusion

The High School of Fashion Industries is meeting the needs of urban minority students in a unique way. The school is beginning to deal with integration of specialty and required subject matter and, to some extent, is moving toward more heterogeneous grouping of students for instruction. The high attendance rate, low dropout rate, lack of discipline problems, and high level of student motivation seem related to the school offering a specialty and to its dual mission of preparing students for careers and for college. The teachers in the academic area have respect for those in the occupational area and vice versa. The feeling at this school is "we're all in it together."

The school staff concerns itself with not only the academic and occupational needs of students, but also with their emotional needs. Although the students appear to be very well adjusted, many of them are dealing with enormous problems outside school. It is these students, and others like them, that make the Fashion High School a special place—a place that offers hope for the future. As one teacher aptly put it, "Teachers who do well here believe in the kids and believe in the sanctity of education."

Murry Bergtraum High School for Business Careers
New York, New York

Setting

Murry Bergtraum High School for Business Careers is distinctive in the New York City school system because of its concentration in business careers, its recognition by parents and students as a school of choice and its vast network of contacts in the business community. The school is set in Lower Manhattan quite close to Wall Street and near many public transportation lines, providing good opportunities to make linkages with the business arena in which its graduates must compete.

The school building is a triangular structure, quite modern in design. It is within walking distance of many official buildings such as City Hall, Police Headquarters, courts, and business establishments. The Brooklyn Bridge stretches past the southern side of Bergtraum's triangle. Some apartment houses dot the area which could be referred to as Bergtraum's neighborhood. Some are high-priced residences occupied by business persons, many of whom have homes elsewhere, others are part of a public housing project. There is not the sense of "community" between the school and these inhabitants as there would be if Bergtraum were a "neighborhood school." Very few of the students who have gone to Bergtraum come from these buildings. Bergtraum's enrollment is about 2,500 students, they come from all five boroughs of New York City.

Bergtraum High School is very well equipped. Being a rather new school it has built-in facilities such as computer laboratories, a photography room, a duplication machines lab, a sales lab, and a broadcasting studio which a modern high school for business careers needs, but which older schools may have to create out of space allocated for other purposes. These facilities and the advanced level of the business courses and experiences help Bergtraum students to excel after they graduate.

Development of the School

A core group of staff participated in the planning for Bergtraum High School in 1974. Many of the beginning planners were teachers and administrators who were specialists in business education in public secondary schools and colleges. The school was to embody a new concept in career education. The students would end up being educated both for college and for entry level positions in business. In other words, the school and

the business community would share in the process of education. This meant that close ties had to be forged between the school and the business community and that the curriculum had to be more up-to-date than high school curriculums are generally. The curriculum had to reflect what was actually happening in the business world at the time the students were proceeding through the school and what would be the upcoming technology for business in the future. To assure these close ties, persons from the business world were included in the initial planning stages and a required internship program was developed so that every Bergtraum student would have some experience in the business world regardless of his/her chosen area of study.

One of the business ties which helped to assure the unique and exemplary nature of the school was the contact with a community organization in the area where the school was to be located. The organization was the Downtown Lower Manhattan Association. With members from this group, major corporations, and personnel from the Board of Education, a steering committee for Bergtraum High School was formed. The committee made sure the structure and mission of the school would meet the needs of the Lower Manhattan area. This included, for example, the creation of new content areas in the high school curriculum such as securities and finance and legal studies in business.

In addition, the planning process included the work of a researcher who studied economic trends and projected the types of jobs which were and would be available in business and the skills students would need in order to be hired for those jobs after graduation. The researcher also opened new contacts and networks in the business community for the school.

The exemplary nature of the school originated in this process. The ideology and philosophy of futuristic business education and excellence in teaching and learning were spearheaded by the planning staff and the principal and were molded into the curriculum at a summer institute in 1975. The school opened in September of that year with the same principal and many of the same staff members who are present at the school today. The general mission of the school has been carried out well and the school is well regarded in New York City and far beyond.

Climate

Staff members at Bergtraum attest to the fact that the school gets its reputation mostly because of the tone set by the principal and the successful accomplishments of

Bergtraum's graduates. They describe the school as "organized" and "well-run." The dropout rate is less than two percent. Over ninety percent of the graduates go on to post-secondary studies.

Parents in New York City like the school because of its reputation for excellence and because it is in what is considered to be a safe area of the city. Many of Bergtraum's graduates get good jobs after high school or go on to do well in college, creating a positive image for the school by example and by word of mouth.

Part of the public relations carried out for the school is done by students in the Student Life Class. These students are enrolled in this exclusive class to learn how to promote and represent Bergtraum for visitors and interested persons outside the school. They must have recommendations from teachers to be accepted into the class. They act as guides for the many visitors Bergtraum High School receives and they work with guidance personnel in the articulation program. This involves accompanying guidance personnel on visitations to junior high schools and middle schools to answer questions for prospective Bergtraum applicants.

The articulation program helps the guidance staff keep track of how desirable the school is. For example, they have spoken to groups of junior high school students who are interested in business. A majority of the options schools and zoned high schools in New York City offer business as an area of study. But, because of its good reputation and safe environment, the students are interested in studying business at Bergtraum, even though schools closer to their homes offer business as an area of specialization.

They will eventually apply to programs at Bergtraum as their first few choices on the high school application form. Although they may be interested in business, they will choose Bergtraum as a school over the specific program of study they desire. Thus Bergtraum programs are listed as their first several choices. They will list other schools with their preferred program only after their Bergtraum choices have been exhausted. This behavior of applying to multiple programs at selected schools is still another indication of the students' unwillingness to go to the zoned schools and provides another strategy of the student application/selection process which may be altered by the institution of random selection in the education option schools.

The parents' association at Bergtraum is small. Since the school draws its students from the entire city, the school, for many parents, is far from home. It is difficult for them to attend meetings and school functions. Even so, school personnel feel supported by the parents in decisions about the students' education and by the excellent word-of-mouth recommendations the parents give the school. Parents are impressed that the school is a positive environment for their children in a safe neighborhood near many different transportation lines. Thus, the school receives accolades from parents and this is reflected in the media and the general public relations information about Bergtraum. Some parents participate with the teachers and students in the Consultative Council which advises the principal on matters of importance to the overall function of Bergtraum.

Students

The 1987-1988 enrollment at Bergtraum was approximately 2,500 students. About one third of the student body is male. The census also includes one-hundred and seventy special education students. Special classes and teachers are assigned to meet the needs of this population, but the students are mainstreamed whenever possible.

Until the fall of 1987, the admission process at Bergtraum included screening all cumulative records of applicants. Starting with the freshman class of 1987, Bergtraum and the other option high schools in New York City were no longer allowed to screen all of their students. Now approximately fifty percent of the incoming class is randomly assigned from Bergtraum's applicant pool. The other fifty percent is chosen by the school's guidance department using the following criteria: (1) attendance and punctuality; (2) interest and motivation for school as demonstrated by passing all of their subjects; (3) rating Bergtraum as a high priority choice on their high school application; and (4) range of ability. For the range of ability criteria, guidelines are used so that sixteen percent of the students who are accepted read above grade level, sixteen percent read below grade level and sixty-eight percent are reading on grade level.

While there is no cut off score in reading or in grade point averages, students who need much remediation of basic skills are not accepted. It is felt that Bergtraum cannot meet the needs of these students and they will not be able to participate fully in the academic program there. The staff agrees, but feels that the school, on the other hand, never receives the very best students in the system because those students usually go to the examination schools or other specialized schools in the system.

Generally, teachers and administrators at Bergtraum are opposed to the new process of randomizing to select half of the students. They have already noted that the behavior and performance of the 1987 freshman class are different than incoming classes of the past. They think these students are less mature and less able to handle high school work. They attribute these changes to the way in which this new class was chosen and they predict that these students as a group will be less successful at Bergtraum. They feel they know the sort of student who will do well in Bergtraum's particular environment and they should be allowed to choose that type which will experience success in the program they offer. Estimates are that between twenty and thirty percent of the freshmen are not well placed at Bergtraum.

When the guidance staff were allowed to select all of the incoming students, one criterion they considered was a mixed geographic representation in all of the departments. This helped to assure a balanced ethnic representation in the student body as reflected by the school system as a whole. Thus the school was fifty-five percent Black, thirty percent Hispanic, and fifteen white and Asian. The staff believes that this ethnic balance will be disrupted as more randomization takes place.

Some staff at Bergtraum believe that the ethnic mix has not been a problem at the school thus far. Most of the students who have been accepted at the school have not participated in any serious racial bias or violence. The minor situations that have occurred have been handled satisfactorily by the administrators and security personnel.

Issues in the placement of minority students in internship positions have not arisen. The staff attributes this to the success Bergtraum has had in building the self-esteem of all students, especially minorities. If a student's self-concept is improved by attending the school and the quality of instruction and learning are high, then his/her motivation level will be higher. Some staff people feel that, "success is a matter of motivation rather than ethnicity."

The time allotted for this research did not allow for the data collection which would follow this premise to its conclusion. It would be interesting to see how many of the minority students had internship placements comparable to the universe of placement settings developed by Bergtraum staff, and if minority graduates experienced comparable success in the corporate world to nonminorities. If this were true, this represents a major departure

from what has occurred previously in terms of the experiences of minority business persons. If Bergtraum has an instructional/motivational formula for bringing about such success, the exemplary nature of the school cannot be overstated.

Mission and Curriculum

Bergtraum is officially an academic/comprehensive school with educational options. These options are three-year sequences which prepare the students for business careers and give them the appropriate background needed to enter college. The school has a definite occupational slant. Its emphasis on business careers is quite well defined, but Bergtraum is not officially a vocational school. There are none of the regular shops such as home economics or woodworking. The business courses are the only career related classes.

Bergtraum High School is an unzoned school in New York City, meaning that no students are assigned there without having been accepted. It draws students from all of the boroughs. In general, students do not transfer into Bergtraum from other schools. From the beginning of grade ten, student schedules are set for a specific area of concentration. There is not much flexibility for entering this schedule late or changing into another concentration without losing credits or having to spend extra terms in high school to complete the requirements for graduation. The programming is rather fixed in all specialty areas. A certain scope and sequence is followed closely because of the developmental nature of learning business subjects and because the students must also take the courses necessary for entering college.

The two aspects of student experience discussed above give Bergtraum High School an edge over other schools in the system. The first one is the opinion that those accepted to the school are "better off" than most of the high school students in New York City (especially students in the zoned high schools). The second is the rigidity of the programming at Bergtraum which makes it difficult to transfer from one area of concentration to another. These factors tend to hold Bergtraum students in place. Educationally astute students and parents do not want to risk moving from Bergtraum to an "inferior" school; neither do they want to spend extra terms in high school if this can be avoided. Thus, the students who originally enter a freshman class at Bergtraum are not likely to leave. They choose their areas of concentration early, stick to that decision, and proceed through the school program, for the most part, as motivated students who graduate after four years.

The staff at Bergtraum cites three goals for all of its students. They are the following: (1) a strong academic education which will enable each student upon graduation to pursue either higher education, meaningful employment, or both; (2) an awareness on the part of each student of the diversity of opportunity available in the business community of this city and of the knowledge and skill necessary to take advantage of those opportunities; and (3) the development of the specific knowledge and skills required for entry into one major area of business. All resources in the school are primed to aid in the success of this mission. The course offerings are designed to provide a general education plus knowledge and skills in an area of business.

In addition to taking the core of regular high school subjects as mandated by New York City and New York State, students at Bergtraum concentrate in one of these areas of business education: (1) accounting, (2) information systems technology, (3) data processing, (4) marketing, (5) secretarial science, (6) securities and science, and (7) legal studies in business. There is also a clerical office skills (COS) concentration, a special program which encourages at-risk students to stay in school. The thirty students in this program attend school on alternate weeks and work the rest of the time in settings monitored by the school.

The traditional business area of secretarial studies is offered at Bergtraum in two different ways. According to the staff, many students at Bergtraum, especially males, reject the idea of training to be a secretary. Because of this, a new area of concentration, Information Systems, was created. The subject matter in this area is electronic information processing, its applications, and administrative support systems. The change has been beneficial in that it has encouraged more males to become involved in this sort of career preparation. Over the years in which the information systems concentration has functioned, males have remained in the program. In 1988, the first graduation year for this specialty, one third of the fifty-two graduates were males, whereas in the concentration called "Secretarial Science," out of one-hundred graduates only one was male. Most Information Systems graduates go on to higher education, and some have been accepted into the information systems departments at Baruch College and Pace University.

Special electives from which the students may choose are as follows: (1) advanced placement classes in science, mathematics, and foreign languages; (2) graphics; (3) fashion art; (4) television production; and (5) band or chorus. The Drama Club at Bergtraum is one

of the most popular extracurricular activities. It has performed works such as *A Midsummer Night's Dream.* Students are encouraged not only to perform but also to write plays. One student who won a citywide prize for playwriting because a Bergtraum teacher encouraged him is going on to study drama in college. A former Bergtraum activity, the school boat ride, is being reinstituted. Five-hundred students participated in the all day trip, sailing up the Hudson to Bear Mountain in the spring of 1988. Other extracurricular activities include Junior Achievement, the Journalism Club, a Future Sales Executive Club, and sports teams.

All students in the school carry seven periods of instruction. All of them must take keyboarding skills, introduction to occupational education, three years of courses in their major subject, and foreign language or computer literacy. It is a school requirement that all students must complete at least one semester of internship in a business setting before they graduate. A cooperative (co-op) program is also offered at Bergtraum. In this program, the students are paid to work in businesses on a part-time basis after school. In some cases, students use their co-op placements to fulfill the internship requirement. Other students participate in both the internship and co-op employment programs. This is possible because of the numerous links Bergtraum has with the business community.

Staffing

The organization and quality of the staff at Bergtraum High School is a positive contribution to the exemplary nature of the school. An unusual feature which differs from the staffing patterns of other high schools is that there is an Assistant Principal for Student Activities. The person in this role is assigned to administer the internship program. This means that an administrator is directly responsible and available to give attention to this basic part of business education for which Bergtraum is known.

The assistant principal works with a job developer, the business advisory council, and businesses to support the school's outside linkages. Many of the administrators have a background in business education and many have worked in business and industry. Their expertise and the ties they have made in the business world are additional aids to linkages necessary for the school's success.

When business teachers leave their positions, it is difficult to find new ones—especially in areas such as stenography. Shortages of such teachers began soon after the school opened. In 1975, the year of the fiscal crisis in New York City, some of the

teachers who were dismissed never returned even when their jobs were available again. Many had found secure positions in the business world which paid more than their teaching jobs did. There are no incentive programs for business persons or for students majoring in business to enter the teaching profession, whereas there are such programs for specialists in trade areas who are eligible to teach in vocational schools. Thus, a number of temporary teachers are usually employed at Bergtraum.

The administrators make it a point to take student teachers from Baruch College and New York University. They screen the students and they make inquiries to the student teacher supervisors at these schools as to the potential of the student teachers to become good business education teachers at Bergtraum upon graduation. The characteristics they are looking for are teaching ability and motivation. The motivation must be for both teaching students and keeping abreast of the rapid changes in business education.

In addition to working with people at the personnel bureau at the Board of Education, Bergtraum administrators work through their contacts in the business and academic worlds to locate new teachers. One department chairperson dislikes hiring teachers with a narrowly focused specialty. Generalists in business education are preferred. Here again, this is because of the rapid changes which can take place in the structure of the department. Course offerings and content change with what is needed by the students and the business world. Teachers who are too specialized often cannot fit into the new structure.

Staff development opportunities for Bergtraum teachers occur in a series of teacher-to-teacher visitations and workshops conducted during preparation periods or after school. This allows teachers to learn from each other. Administrators describe these interactions between teachers as open and useful for integrating the work of the entire staff. Demonstration lessons and workshops are conducted periodically by school personnel and the Board of Education.

Those teachers who supervise student teachers get certificates to take courses at the student teacher's college. This offers opportunities for teachers who are very specialized to broaden their knowledge of business. Sabbaticals also help teachers and administrators to update their skills and knowledge in business and in education.

Linkages

The encouragement and growth of partnerships between schools and business is a phenomenon which is gaining wide appeal in New York State. One publication by the New York State Education Department lists nearly seventy-five successful programs. Governor Cuomo has called for the proliferation of such linkages. The New York Alliance for Public Schools has been established as a coalition to foster partnerships. Bergtraum High School exemplifies some of the best ways these partnerships can be used for the mutual benefit of school and business.

Formerly, the staff at Bergtraum had to reach out to the business community in order to develop the ties that were needed to place interns and to be advised about jobs and new developments in business careers. School administrators solicited support and participated in activities which would allow for information sharing. They scheduled field trips to business settings and invited business persons to speak at the school. The Downtown Lower Manhattan Association continues to develop support for local businesses.

Companies are more receptive now that the school has developed a reputation of quality. Momentum is growing for school/business partnerships. Businesses now request linkages with Bergtraum, including requests to have students as interns, and various agencies and organizations ask to have tours of the school.

One of the first linkages of Bergtraum with the private sector was with the Chase Manhattan Bank. Currently Chase Manhattan takes fifty of Bergtraum's students as interns each year. These student interns are assigned to offices throughout Chase's corporate structure and perform tasks which heighten their awareness of the demands of the increasingly complex world of work. The bank advises the students in a Small Business Management Club. Bergtraum is also linked to the New York Stock Exchange, the Marine Midland Bank, and State legislative bodies. There are nearly eighty-five sponsors of Bergtraum students. Organizations and agencies such as these provide internships and also provide special projects such as seminars, market simulations, learning materials, and mentoring.

Most of the internship placements are in the subject area in which the students are majors. The school asks the staff at these placement settings to allow the students to perform vital services. Jobs with "makeshift" work are avoided. The strategy is to let students see how important their work is to the whole organization. They realize that they will

be missed on the job if they are absent. This helps the students learn the value of punctuality and good attendance.

Duties the students might perform range from receptionist work to complex computer analysis, depending on their skills and experience. In addition to their assigned work at these internships, they may shadow various employees to see how a day in business unfolds, or they may interact in other informal ways with permanent employees. These experiences give the student a broad sense of what happens in the workplace and it improves their interpersonal skills as they observe and question workers. The companies require students with good communication skills and attendance records. Some specify that the students should come with an attitude which will allow them to take direction well.

Articulation between the school and the internship settings makes the business personnel aware of the skills students are learning in school and the school aware of the skills students acquire as interns so that the curriculum and the placement become relevant and responsive to one another and to current requirements of the world of work. Students are required to write reports at the end of their internship, and the setting for the internship is required to send the school an evaluative report on each student. The reports are read by the staff at Bergtraum and considered when grading the students.

In cases where there are problems with an intern or with the setting at which a student is placed, the assistant principal arbitrates. For example, in the case where one company complained that a student intern had a poor attitude toward work, it was found that the student was unhappy with the type of work she was being given to do. The situation was resolved by an agreement to increase the complexity of the student's work and by giving the student counseling on ways to approach an employer when some aspect of work is not satisfactory.

From some of the prospective settings for internships comes the inquiry, "What will we get out of participating in the program?" The staff at Bergtraum informs them how ties with the school are fostered by the state and how they can bring about good public relations and more opportunities for the organization. It is also a way to prescreen young people who may become permanent employees after they graduate. Even more important though is the long term benefit of providing service to the educational system and assuming the task of training the business leaders of tomorrow.

Bergtraum High School has a business advisory council which was formed out of the original businesses which suggested the idea for a business careers high school. The council makes sure the skills the school is teaching are the ones that will be needed in the business world. Suggestions made by this group have helped Bergtraum High to revise the content and sequence of its courses and internships. For example, the teaching of certain computer languages at certain times was worked out in collaboration with the business advisory council. Now the sequence in which computer languages are taught is the same sequence that the students will need them as they progress through various business experiences. There are also plans to begin an advanced placement class in computer programs which will prepare students for the growing use of programs such as D Base and Cobol.

Issues

This case study is about a high school with a legacy of success in training young people for business careers. The reasons for this success lie both in the administration/organization of the school and the mutually profitable linkages between the school and the business community for which it prepares and recommends workers.

It is evident from the data generated at Bergtraum that factors which aid good student outcomes have been abundant in the school since its inception. Many of the recurring themes which characterize the Bergtraum ethnography are identical to the aforementioned elements which are present in the most effective schools—a principal who, from the beginning, has provided leadership and a proactive style in linking academic education with occupational skills and experiences; a strong academic climate fostered by a caring staff and nurtured by the reputation of successful graduates; an interpersonal climate which has been relatively free of tension and disruption; a strictly adhered to curriculum structure which lets students know from the beginning what they must accomplish and in what sequence in order to graduate; a departmental organization which is flexible enough to accommodate changes in business and technology; and lastly, but most importantly, a vast network of linkages with organizations, agencies, and businesses which have a vested interest in educating the young people who will be the workforce of the future. With this cadre of "effective" traits, the chances for any given student or program to succeed at Bergtraum are maximized. When problems or loopholes do arise, there is a high level administrator for every category, including the school/business linkages, to act as a troubleshooter.

Despite this success, there may be some indications that the new student selection process may be the source of a new problem at the school. The staff's opinion that randomization has led to a "less qualified" freshman class must be considered. If "less qualified" is synonymous with "more at-risk" and if this population is in fact, or in perception, increasing in the school, new systems may have to be devised to correct the lack of student preparation or the perception thereof. Interesting questions for future study are, "At what point—or at what critical mass—will the proportion of less qualified students begin to hinder Bergtraum's success rate in outcomes for all students?" or "At what point may the randomization process disrupt the ethnic balance which has been achieved at Bergtraum?" The latter question has grave implications for the quality of educational opportunity for New York City students.

Another rather complex issue which Bergtraum High School continues to experience and for which solutions are needed is the traditional academic-vocational dichotomy. Because of its split nature which is partially academic and partially vocational, Bergtraum is caught between two sometimes conflicting roles. The following two items exemplify this curious status.

Vocational schools require a higher level of funding than academic schools because of the materials and equipment needed for the hands-on experience or shop classes. In addition to the funds for the original purchase of equipment, monies are needed to maintain the shops. Frequent upgrading of the equipment is a must if the students are to receive a viable education in line with what is required by the business community. One of the most serious unmet needs of the school is money to maintain and upgrade equipment. For example, some of the new computer software packages cannot be run on computers with the small amount of memory which was adequate in the mid 1970s, but is now inadequate in the 1980s. Bergtraum has more of these machines to upgrade than the average academic high school which contains a computer room. As long as Bergtraum maintains its objective of preparing students for college, it will not fit the traditional definition of a vocational school.

On the other hand, Bergtraum suffers somewhat as an academic school because it has such a well defined occupational concentration. Students who attend the school and wish to attend college are sometimes penalized by institutions of higher education. One college-bound student who excelled at Bergtraum and was ranked second in the graduating

class with a ninety-seven percent average was denied entrance to an Ivy League college. The reason given by the college was that a ninety-seven percent average in a business high school is not the same as it would be in an academic school.

To the extent that this academic-vocational dichotomy lingers in agencies which provide educational resources and in postsecondary institutions, Bergtraum will remain in a curious juxtaposition with other high schools in college acceptances. As the dichotomy diminishes, as related research findings suggest, Bergtraum will become a candidate for "the model of choice" in an effort to create high schools which "do it all" in terms of vocational and academic education.

The Entrepreneurial Education Program at Jane Addams Vocational High School New York, New York

Background

This case study differs from the others presented in this paper in that it highlights only one of the programs in a vocational high school. The program was chosen because it is an example of an innovative, inspirational effort to make vocational education meaningful to students who are considered the most at risk of not finishing high school. Many of the students who participate in the program are the most at-risk students within a student body which is among the most disadvantaged in New York City. The school as a whole does not have all the features we have described as exemplary characteristics, but, with the success of this program, the staff and the students are generating ideas on how to improve some other facets of the school.

The school is Jane Addams Vocational High School located in the Bronx, New York. The Entrepreneurial Education Program there has inspired students to establish their own small businesses and, in turn, has encouraged them to stay in school and make the most of the educational resources afforded them. These young business people have come to realize that the profits earned from running a business and staying in school are financially rewarding and psychologically advantageous. They are making money and they are increasing their feelings of confidence and self-worth.

Program Description

A growing list of radio shows, television programs, and periodicals have profiled the Entrepreneurial Education Program at Jane Addams Vocational High School. The effort is receiving wide acclaim as a successful way to teach special education students and students at risk of dropping out to function in the world of work and to inspire them to remain in school until graduation. Learning about entrepreneurship has inspired many of the program participants to start a business. These small companies, twenty-seven in number, had a combined sales total of $17,000 in 1986. The experiences of the program are now being shared with other schools in New York and elsewhere. National recognition was received when five of the student entrepreneurs accompanied a teacher to a national conference for inner city entrepreneurs.

The program was founded in September, 1985, by one of Addams' business education teachers. His goal was to use business as an educational and inspirational tool to keep high risk students in school. Many of these students had already stopped coming to school or came sporadically; some had attendance rates of less than thirty percent. The business teacher knew that the future would be bleak for these students with no diploma and no job skills. He knew that entrepreneurship could be a catalyst to rekindle the interest of indifferent and troubled students. He states, "I have discovered, again and again, that my lessons on entrepreneurship appeal strongly to students viewed . . . as undisciplined and low achievers." Thus, he began the Entrepreneurial Education Program with a few thousand dollars donated by the Trickle Up Program, a foundation that helps disadvantaged people to start businesses.

Some of the program's participants have regular schedules of classes at Addams. Many of the high risk entrepreneur students do not attend regular high school classes. The idea behind the program is that running small businesses requires these students to obtain the same knowledge that they would get in classes. For example, learning about government and citizenship is required of high school students in regular social studies classes. These entrepreneur students gain similar knowledge by obtaining business licenses, paying taxes and insuring their businesses. It has been shown that the self-confidence and social skills of these students increase as they develop sales presentations and business plans for their products and services.

Some of the students work for part of the day at the New York City Department of Housing. After working in the morning they remain at the site for instruction in reading, mathematics, and entrepreneurship. All of the students attend class more regularly than they had in the past.

Examples of the students' businesses are the following: "Anthony's Fix-It," an auto repair service; "Marisol's Cleaning Service," a housecleaning business; "Isaac's Care For The Elderly," a service which helps and cares for older persons; and "Josephine's Lingerie," a commercial venture which features lingerie and other boutique items. One student established a break dance company which performs at various places in New York City and has traveled as far as Italy and Ecuador to give performances.

Each business begins with about one hundred dollars in seed money provided by the program. This helps the students to start their businesses which are housed, in most cases, at their homes. Some have made alternative arrangements. For example, since "Anthony's Fix-It" needs a different kind of space and specialized tools too expensive for the student to purchase, the student has made an arrangement with a local gas station. He cleans up their station in return for the use of their tools.

Other entrepreneurs take their seed money to New York City's garment district and learn to deal with wholesalers in the garment and jewelry trades. Students also use the seed money to purchase licenses and the necessities for bookkeeping and stock inventories.

The principal at Addams is very supportive of the Entrepreneurial Education Program. She and the program's founder measure the program's success not only by the number of dollars students earned but, more importantly, by the program's low dropout rate, improved grades and attendance of the participants, fewer pregnancies among the students, and increased self-esteem. The founding teacher asserts that being in business keeps many of these students out of the troubles that often afflict inner city youth. It gives them something productive to occupy their minds.

Contextual Factors

This exemplary program operates within a very needy urban high school. The staff and the students have much spirit for the school, but they realize that being in a disadvantaged area and drawing from a disadvantaged population makes it difficult to maintain good student outcomes without an enormous amount of resources. The fact that one program has become such a resounding success gives them encouragement that disadvantaged students can be motivated and can succeed in this setting.

Jane Addams Vocational High School, which was established in 1937, has changed quite a bit in its enrollment and its mission. Formerly, the student body was nearly one-hundred percent female, since the occupations taught there were traditionally female such as nursing and cosmetology. Now in an effort to attract more males to the school, Addams' logo says "Young Men and Young Women Preparing for the Future." The present student enrollment is about twenty-five percent male and males make up thirty-eight percent of the one-hundred and four member staff.

Addams' 1,634 students are selected without extensive screening since the number of applications to the school usually will not fill its openings in the subjects/fields offered. In the past, the cosmetology program was the most popular and it received far more applications than the available seats. The applications are down now and more applications are received for the business department than for any other area. The school is supposed to accept sixty-eight percent of its students from applicants who are on grade level. Sixteen percent should be above grade level and sixteen percent below. However, the applicants rarely have a grade level spread which would allow accepting students according to these guidelines.

Addams can officially accept students from the entire city, but most of the students come from the immediate area of the school which is the South Bronx. This area has received national attention for its poverty, its lack of infrastructural development, and the lack of services to remedy its social and economic plight.

Addams receives some students from an integration program where city zoning rules are changed to encourage more ethnic balance. Students in other zones, which are not in areas with heavy concentrations of minority students, are encouraged to cross the zone lines and attend Addams as their zoned school. Few students take advantage of this option. The present student body is fifty percent Black and fifty percent Hispanic. A majority of the students are eligible for public assistance. The South Bronx neighborhood is considered unsafe by many New York City residents.

Addams High School reaches out to potential applicants with a recruiting program which is conducted in intermediate schools and junior high schools. When potential students visit or inquire about the school, the staff assures them that the environment is safe inside the school and that there is an opportunity at Addams for personal attention and a flexible schedule.

The flexibility of student programming at Addams is unusual. It has the most flexibility of any of the schools we studied. There is no problem in Addams assigning students to their first choice of major subjects. Students choose their area of concentration in grade ten, but the staff makes every possible effort to allow students to transfer to another program if they wish to do so. Many times the students' class schedules are individualized, allowing a great deal of choice within a basic structure of requirements. This makes the

programming tasks of the guidance staff more difficult, but it increases the students' options.

The school has nine periods of instruction scheduled between 8:04 a.m. and 2:48 p.m. Most students only attend classes during seven of these periods, allowing much flexibility in the hours a student must be in school. This, according to the principal, increases the school's holding power. It is easier for students to hold jobs after school when flexibility is built in to school schedules. Although many entering students are significantly below grade level in reading and mathematics, eighty percent of the graduates enroll in institutions of higher learning, including vocational training institutions, technical schools, and two and four year degree programs.

Areas of concentration from which the students may choose are (1) Business, (2) Cosmetology, and (3) Health Careers. Students in any of these areas may choose to take a class in entrepreneurship, some begin a business while still in high school, and some take the class because of the information which is to be gained and the excitement it has generated.

At one time, Addams had a large department of textile industries, which included designing and sewing. This was discontinued a few years ago as the market became no longer viable for America's workers. There has also been a loss of funding for the nursing program. A practical nursing program was offered in grade twelve to students in good academic standing who were recommended by a member of the faculty. The program combined classroom instruction with practical experience in health-related settings. Students were able to graduate with a license in nursing. A few years ago the health-related settings, where these students received their training, lost the funds for hiring cooperative (co-op) nursing students. Since funding has been cut, it is no longer possible for the students to get the hours of practical experience needed for state licensing and to get paid for their work.

Now other areas at Addams offer co-op placements where students attend school every other week, go to a job on alternate weeks, and are paid. Health majors participate in this program. They learn health-related jobs such as the clerical work associated with patient care. For advanced placement students in the health area, there is a "Bridge to Medicine" Program linking Addams to one of New York City's public colleges. The goal

of the program is to prepare highly motivated high school seniors for careers in the medical profession.

For hands on training, co-op business students are placed in local shops, industries, government agencies, and business firms. Many private and government agencies have recently contacted Addams and offered paid placements for co-op students. They are especially willing to help students from disadvantaged families. These firms and agencies include the Department of Mental Health, the Department of Sanitation, the Department of Housing Development, private hospitals, and a geriatric center. Addams currently has co-op students placed in each of these agencies.

Some of the placements are true co-op settings where students alternate weeks between the co-op setting and school. Others offer the students part-time jobs after school. In order to get credit for their work, all students must work a minimum of two-hundred and twenty-five hours per semester. School personnel monitor the students' progress in all of these settings and the students write journals about their work experiences.

Forty percent of the students have co-op placements. The hourly wage is from $3.35 to $7.00. Thus, both students who are in the entrepreneur program and students who are not have the opportunity to earn money and get credit, too. The students refer to this as "earn while you learn." For many of the students at Addams, earning wages while they are in high school is a necessity.

Many support services are available for students at Addams including Chapter I programs, a family assistant, three health coordinators, and an After-School Peer Group Tutoring Program. Extracurricular activities include basketball, journalism, modern dance, self-defense, a Gospel choir, and a volunteer group which gets the students involved in community development.

Issues

The recurring theme of the expense of vocational education was reiterated at Addams. More funding is needed in order to raise student outcomes for the entire student body. Some concerns are the following: (1) State-of-the-art equipment and the cost of repairing it are expensive. For example, facilities like the school's on-site laundry make the laundering of uniforms and linens for cosmetology less expensive. On the other hand, it entails more equipment which has to be repaired and replaced periodically; (2) Lack of

funds for computer software put the schools at an extreme disadvantage since the ability to manipulate software has become such a requirement to obtain good quality entry level jobs.

Recent changes in teachers' salaries have helped to attract some teachers to Addams to relieve a shortage that existed. This is especially true in business education. Unfortunately, this does not apply to cosmetology. There is a great need to update the skills of the present cosmetology teachers. The principal feels there should be a mandate for such continuing education and that the state should run workshops for teachers in career-related areas.

In general, the cosmetology teachers at Addams are not working outside the school in their fields. They are teaching according to what they learned when they went to school and from whatever experience they had before entering the teaching profession. Presently there are no requirements for them to update their skills. The principal suggests that teachers be granted mini sabbaticals so that they can take classes and participate in practicums to learn new techniques. She suggests that well-known beauty schools and salons should offer apprenticeships for teachers on leave.

Some of the staff at Addams are dismayed over recent changes in high school requirements made by the New York State Education Department. They feel the new requirements show a lack of appreciation for vocational education. The requirements are more stringent in academic areas, thus taking students' time away from vocational skill areas. In the newly required courses, the content has been expanded so much that a great decrease in hands-on training must occur if students are to prepare sufficiently to pass statewide exams. The staff feels that the regulations show a lack of recognition that students need to acquire the skills for entry level jobs in order to obtain employment even if they are going on to college.

Addams does experience some attrition of students because of frequent moves made by many of their families. On the other hand, Addams has students who can say they are the third generation in their families to attend the school. This adds to the pride and spirit the students feel. School pride and successful programs such as the Entrepreneurial Education Program are helping Jane Addams Vocational High School to strive and improve in spite of the high-risk factors present in its population and environment.

George Westinghouse Vocational High School
Chicago, Illinois

Setting

The tallest building in the world, the Sears Tower, can be seen from the eastern windows of the Westinghouse Vocational High School in Chicago. The building stands out in the panoramic view from the school as a tribute to the various building trades, business areas, technical skills, and services which are parts of the curriculum at Westinghouse. The school and the building serve as examples and reminders of the processes and products of good occupational education.

The school is twenty-one years old. It sits on a large corner of land in a neighborhood of warehouses and run down multi-unit dwellings on Chicago's West Side in High School District 31. The main building, a T-shaped structure, was formerly a candy factory and, thus, provides the large work areas with high ceilings and space for machines which are needed in an occupational high school. In 1983, the space on the eastern side of the T-shape was filled in, with a new seven-million dollar addition to the school. It contains an auditorium, a gymnasium and a swimming pool accessible to the main building by an enclosed bridge.

The school's interior is neat and orderly. There is much need for cosmetic repairs of walls and ceilings, but one can observe evidence of pride and caring for the environment where graffiti has been scrubbed off walls, where rooms have been newly painted (by teachers and students), and where artistic work and informative signs are present.

Development of the School

Originally Westinghouse was planned as an area vocational school which would draw students from inside and outside the Chicago city limits. However, those plans were not brought to fruition and the school opened without this broad regionalization.

When it first opened in 1967, Westinghouse was able to attract well-prepared students from the city at large. The school and its programs were quite different than they are today. During the early years of the school's history, the vocational nature of the school was stressed as a sort of "learn a trade and then go out to work" philosophy. The academic portion of the curriculum was secondary to vocational learning and the expectation was that

students would not seek further education in postsecondary institutions, especially not in colleges and universities which stressed academic learning.

At that time, the emphasis at Westinghouse was on the formation of skills. Some of the students were given half-day schedules so that they could participate in a cooperative (co-op) work program. Some of them continued their co-op jobs as full-time employees after they graduated, but for others no co-op jobs were found. School spirit and enthusiasm were based largely on the successful sports legacy of Westinghouse which had sent alumni to major league sports teams.

Many of the teachers who have taught in the school since the 1960s or early 1970s knew the school could be better than it was. They thought it was not challenging enough and not as up-to-date in equipment, materials, curriculum, and organization as it could have been. Some curriculum areas in the school such as the repair of small electrical appliances had outlived their usefulness in a society undergoing rapid technological change. They wondered how students who graduated from that department would obtain and hold satisfying employment. Some of the machinery such as that in the printing department did not work at all. Despite this knowledge, there was no incentive for the faculty to evoke changes. Thus, for the most part, they went along with things the way they existed.

Other teachers had an even stronger reaction to what was taking place at the school. They said, "The role of a Westinghouse teacher at that time was to be a caretaker . . . and even with all of that caretaking the halls were covered with graffiti, and equipment disappeared from the building." Teachers didn't have to plan lessons and generally, ". . . didn't do what teachers are supposed to do." They thought it was a shame because the students were not getting the quality of education they deserved.

When the former principal was to retire, members of the community visited several schools and explored their administrative structures. They asked questions and shadowed principals in an effort to learn new, more innovative ways to organize and administer a high school. They encouraged an effective elementary school principal to apply for the job of principal at Westinghouse after they conducted several visits and observations of his school.

This man became the principal of Westinghouse in 1982. He immediately saw the need for improvements and the need for opportunities to bring Westinghouse more into the

mainstream of contemporary high school functioning with more emphasis on future needs in the occupational areas and further training past the high school level. The outdated shops were closed and new equipment was obtained for others. Remedial programs were eliminated and the mission and philosophy of the school is gradually being changed.

Climate

The climate of the school changed along with the new administration. The formation and activities of street gangs which used to exist in the school have been eliminated through new rules which are strictly adhered to and into which student input was sought. The new principal patrolled the hallways continuously in order to monitor student behavior and to make sure that new rules such as "no flyers pasted on the walls" and "no student enters a classroom without a pass after the tardy bell has rung" were enforced. A dress code was instituted which banned the wearing of any paraphernalia which is associated with gangs. A new code of conduct for the lunch room was written by students and staff members. When responding to questions about the present climate of the school, students often use a comparative frame:

> "It's the best school in this neighborhood."
>
> "There is [another school], which is better, but this one is in my neighborhood."
>
> "In the schools my friends go to there is fighting, gangs, and drugs . . . but not here."
>
> "My aunt says it has calmed down since she went here . . . about ten years ago."
>
> "If I had gone to another school, I would have dropped out and I'd be hanging on the corner . . . all my friends did."

Teachers and administrators cite general observations and specific actions which show the climatic changes which have taken place during the past seven years at Westinghouse:

> ". . . under the new administrator it's like a breath of fresh air."
>
> "The change is dramatic, . . . it was needed."
>
> "Now we participate together, before, everyone was in his own world."
>
> "Graffiti is removed soon after it is created."
>
> ". . . the school profits from the increased publicity and recognition."

Observations in halls and classrooms at Westinghouse show that the school is very quiet and most of the students are orderly. In cases where the students break rules, teachers, or, if the situation warrants, an assistant principal, deal with the students with an air of "no nonsense tolerated here."

Students

There has been a change in the abilities and qualifications of students who are accepted in Westinghouse, especially since the advent of magnet schools in Chicago. Many of the brightest students prefer magnet schools to vocational schools. Also, more students from impoverished homes are applying and being accepted at Westinghouse. The poverty rate in the school is presently sixty to seventy percent. According to staff members, the acceptees are generally less prepared and more immature than they used to be. Once they enter high school, the students often test lower on tests of basic skills than they did in elementary school.

Applications for Westinghouse are sent to elementary schools throughout Chicago. The counselors in the feeder schools are informed of the selection guidelines, and elementary school students and their parents are invited to visit the school. Generally, three thousand applications are received for about five-hundred and fifty seats. The administrators at Westinghouse who participate in the acceptance process look for the following items: (1) a grade level reading score of at least 6.5, (2) a record of good attendance, and (3) a record of good behavior.

The goal of the selection procedure is to select a broad cross section of students in terms of their skills and abilities. No effort is made to find out the applicants' ethnic backgrounds. The entire student body is black as Westinghouse continues to be known as a place where a better education can be obtained than in the neighborhood high schools in black areas of the city. About sixty percent of the graduates of Westinghouse enroll in postsecondary institutions. As one student put it, ". . . even though it's a vocational school, you can go to college from here."

Although the number of applications is increasing, the number of enrolled students is decreasing. Many of the applicants do not meet the specified guidelines for acceptance, some who are accepted do not enter, and many transfer from the school because they find it is too far from their homes. Also, high pregnancy and dropout rates cause Westinghouse

to lose students. The present enrollment is 1,650 students in a school which can hold two thousand students. The enrollment in 1978-79 was 1,820. However, more girls are being attracted by the new offerings, especially in the business department. Presently, sixty percent of the school's students are female.

Much time is spent infusing students with values which pertain to their roles and responsibilities as Westinghouse students. One particular motto which is infused is, "You are in charge of you," which makes the students feel more responsible for their learning and their behavior.

Mission and Curriculum

In addition to the required core of academic subjects—English, mathematics, social studies, and science—students at Westinghouse must choose an area of concentration related to business, industry, or services. The choice is made in grades ten or eleven, while the freshman year, and for some students the sophomore year as well, is reserved for a rotation which gives the students exploratory experiences in several shops.

In the fall of 1988, freshman and sophomore students overwhelmingly mentioned business as their first choice for an area of concentration. Architectural Drafting and Electronics are also popular among male students. During the two or three years in which students have a career-related concentration, one-hundred and sixty minutes per day are spent in these classes.

The areas of concentration from which the students may choose are (1) Automotive Services, (2) Business, (3) Commercial Art, (4) Electronics, (5) Culinary Arts, (6) Health Occupations, (7) Fashion Design, (8) Building Trades, (9) Cosmetology, (10) Printing, (11) Machines, and (12) Architectural Drafting. Also, students must choose between physical education and ROTC, and they all must take music and art or drafting.

Articulation between occupational and academic subjects at Westinghouse is not well developed presently, but the administrators are supporting and encouraging the idea in order to institute changes in the future. Some teachers in the English Department have obtained lists of career-related vocabulary words from teachers of occupational courses. They try to use them in lessons whenever possible. One project, The City Experience Class, is experiencing success in bringing together two subject areas. An English teacher and an Architectural Drafting teacher created this class so that students will get to know more about

the distinctive architecture for which Chicago is famous. The students speak and write about this topic in the classroom and take field trips to experience the architecture first hand. They keep journals and report on their experiences. The two teachers involved will give a presentation at a conference to publicize the things they and the students have accomplished in this class.

For students who are doing poorly, the school has laboratories for reading and math. Chapter I funds allotted to Westinghouse help to fund these laboratories. Programs and kits made by commercial vendors are not used in them; the teachers make and order individualized materials specifically designed to meet the needs of Westinghouse students who need extra help.

Other students such as those who are handicapped, bilingual, or have learning disabilities can participate in a tutorial program. One of the school's administrative assistants directs the program; he asks shop teachers for the names of students who are doing well or who would make good tutors. He gives the candidates an orientation to tutoring and monitors their progress in the program.

The students who need extra help in their shop classes use the services of these tutors. The school pays the tutors $3.35 an hour. There are presently twelve tutors; each one works for one hour per day. This is a successful program for which more funding is needed. It improves the academic work for some students and boosts the self-esteem of the tutors. The administrative assistant estimates that the school could use twenty five of these peer tutors.

A summer school program is offered at Westinghouse for students who have failed classes. It is open to all high school students in District 31. The summer school serves approximately one-hundred and fifty students, many of whom are juniors who need to make up courses so that they may begin their senior year in the fall. Subjects which are not offered at Westinghouse are available at one of the other high schools in the district.

Students who are in the co-op program have jobs to go to when they are dismissed early from school. The principal prefers not to use co-op placement sites which offer low paying, "dead-end" jobs such as fast food restaurants. Instead, he encourages linkages with organizations such as The Fine Dining Association so that students in the Food

Services Department will have more high-level co-op experiences and more appropriate models upon which to plan their careers.

In an effort to institutionalize some of the changes which have turned Westinghouse from an average school to an exemplary one, a plan has been developed to create a whole new organization for the curriculum which will be three schools-within-a-school. This transformation of Westinghouse Vocational High School will be called Westinghouse Prep Tech (WPT) or "Prep Tech." The new mission of the school is based on the identification of what students actually need in education today. The intent is not to make Westinghouse less oriented toward occupational subjects, but to combine an appropriate amount of academic knowledge with vocational training so that students will be well equipped to compete successfully in the world of work. It also is geared toward allowing students to have more choices about working and/or going to college after high school.

The three schools within Prep Tech will combine the occupational areas which are presently taught into a scheme where related career areas share the same teaching staff, that is, the first school-within-a-school, the School of Commerce and Communication, will have a set of teachers for academic classes plus teachers for the areas of business, architectural drafting, commercial art, and printing. Similarly, the School of Professional Services will have its own academic staff and teachers of cosmetology, fashion design, culinary arts, and health careers. The third part will be the School of Evolving Technologies with its academic staff and teachers of automotive services, building trades, electronics, and manufacturing systems. Each of the three schools-within-a-school will have approximately five hundred students and thirty teachers. Working on joint projects and mentoring will be encouraged among the teachers. Since the thirty teachers will include both academic and career-related faculty, the integration of these areas will be more readily facilitated.

Under the new Prep Tech organization, the occupational classes will become more project oriented. The projects will utilize knowledge and skills from several of the classes in which the students participate. Elements of cooperative learning will be incorporated into the projects. The school's philosophy of no remedial and no advanced placement courses will remain. There will be an effort to make the instruction appropriate for students with a range of abilities who know the faculty has high expectations for them. Reading and mathematics laboratories, the homework help center, and the tutoring program will continue for students who need these services.

The present practice of having freshmen explore a variety of shops will be maintained, but more students will begin an area of specialization in their sophomore year rather than in the junior year. The school day may have to be restructured into longer periods than the forty minute class periods which the school has now. One half day per week will be allotted for interdisciplinary projects.

Students will be a vital part of Prep Tech. They will be involved as monitors for the halls, the lunch room, and for other safety aspects of the school. Students will also continue to express their ideas for school reform directly to the principal and will continue to serve on decision-making committees such as the Principal's Forum.

The planning and organization which have been accomplished thus far for the new Prep Tech have been accomplished by a program coordinator. The position was created to fill the need for developing the new curriculum structure. The principal chose a person who had been at Westinghouse for twenty years. When chosen as the program coordinator, he was the department chairperson for English. A substitute was hired for the English department and funds were obtained for the coordinator to visit urban and suburban high schools around the country and to attend the appropriate conferences while fulfilling the full-time position as coordinator.

Some of the things the program coordinator sought to find out were what schools should look like if they are to train students for the future; where the jobs will be; and how the support and resources of local and regional policymaking agencies can be tapped for redesigning of the curriculum. In his search he began to see nationwide trends in the renovation of traditional vocational education, for example, the blurring of the distinction between academic and vocational education. He saw that high schools which emphasized occupations were also concerned with providing an education which would allow students to enter college, and general high schools were beginning to specialize in areas related to business, industry, and services.

The program coordinator also worked with a planning team which still functions as a transition team to bring the school from the present functioning into the new concept of Prep Tech. Resources for the planning team were acquired through a Chicago Public School venture known as CANAL (Creating a New Approach to Learning). This project helps schools to improve by setting guidelines for the organization of planning teams, by

monitoring planning, and by providing substitutes so that teachers can be trained regarding the new school organization. It makes sure that the needs of the community, the parents, the teachers, and the principals are considered in the reorganization of the school. Westinghouse will be in the CANAL project for five years.

Staffing

The faculty at Westinghouse consists of ninety-two teachers. One principal and two assistant principals are aided by various coordinators, assistants, teacher aides, and specialized staff persons for support services, security, food services, and attendance. In the past six years, the staff has changed from seventy percent white to a bit less than sixty percent white, the maximum allowed for any one group in the Chicago Public Schools. The remainder of the staff is black.

Obtaining new teachers in most academic areas is not difficult, but, as in the other schools we studied, teachers for many of the career-related courses are difficult to find and keep because the salaries in industry are higher than those in education. Also, for tradespersons who have five years of experience and want to become teachers, the number of college credits needed for certification has been raised from forty-eight to sixty. Tradespersons who teach at the school say this change has been discouraging to the recruitment of teachers.

Many issues involving the staffing of the school are related to those of climate mentioned above. The new principal had to come to grips with the fact that the faculty was aging. More people who were newer to the teaching profession had to be hired in order to add new energy and new ideas to the school. More was needed in the area of inservice training in addition to the three sessions provided by the Board of Education each year. What was needed was an effort to revitalize the ethos of the school.

A program was developed in which Westinghouse teachers could visit other schools in the city to observe other teaching strategies. Plans were established for inservice training conducted by Westinghouse teachers in which they could give demonstrations to each other. One of these sessions was observed in October, 1988. The teachers of occupational classes prepared presentations for teachers of academic areas. Teachers in the latter group rotated from shop to shop to watch the presentations. In many cases, students were part of the inservice training. They carried out activities which showed their

knowledge and skills in areas such as printing, food services, and the operation of large machinery. A typical comment heard from teachers and administrators as they rotated from shop to shop was, "I never knew that before!" This was an excellent way to make the staff aware that things are happening in classrooms other than their own and to encourage staff members to work with staff in other departments.

Another strategy adopted by the present principal to promote staff cohesiveness was the way in which school funds were managed. As various grants were obtained for the school and special funds for vocational education came from the Board of Education, the money, which could have been targeted for upgrading a particular shop, was spread among several departments so the teachers would get a feel for the new way of operating and the changes which were possible in the school. This energized teachers and made them take notice of the way the school was changing. They felt that no particular teacher or department was reaping the benefits of the additional funding. Teachers who had not participated before in events other than those which directly involved their classrooms began to attend conferences, write proposals for grants, and participate in local and regional opportunities for vocational teachers and students.

The new principal also began checking lesson plans and some teachers, for the first time, were obliged to write them. As the most disgruntled teachers began to transfer out of the school, the faculty became more cohesive with a large majority of them approving of the changes which had been made. The principal acknowledges that it took nearly four and one-half years for the administrator/staff relationships to be at the level where he felt comfortable and where the staff understood his leadership style and felt comfortable in the changed atmosphere of the school. Success in the area of interpersonal relations at Westinghouse has come slowly with a good deal of patience and tolerance on all sides.

The anticipation of the complete reorganization of the school is being accepted in a variety of ways by the staff. Some staff members say they have heard about it, but know no details yet; others are taking a "wait and see" stance. Still others know about it and have taken stands for or against it. Those who are against it feel that it is too much change too fast and that the reorganization will change the good aspects of Westinghouse along with the things which need to be changed. For example, they worry that students who want to learn a trade and enter an apprenticeship after high school will not be provided for under the new organization. They think the school will be too oriented toward preparing students for further education.

Other staff members are enthusiastic and are anxious to work with the transition team to bring about the planned changes. They worry about things like convincing the "wait and see" people to become more involved and providing enough time and training so that the faculty will understand and appreciate the programs and the rich opportunities for creativity the three schools-within-a-school will generate.

Linkages

Community outreach has been widely expanded at the school. Parent participation is sought and encouraged for the decision making processes and the day-to-day activities of the school. As events and new policies are publicized, and the parents' role in them becomes known, other parents may want to have the same opportunity to become involved.

Links with local colleges and universities are being developed. A program began in 1987-88 with the University of Illinois at Chicago which brings college students into the school before their student teaching experience. They observe and aid teachers at Westinghouse and gain some of the skills and maturity which will be necessary for their student teaching assignments. Likewise, Westinghouse gains from the experience as teachers act as role models for the college students and are stimulated by the students' actions and ideas. The students spend at least twenty hours in the school and the participating teachers receive tuition waivers for courses at the University of Illinois.

All of the staff members who were interviewed mentioned that the strength of the principal is his ability to form networks in the community and with the central administration in Chicago in ways which bring positive publicity and recognition to the school. His strengths have resulted in a definite change in climate and ethos for Westinghouse Vocational High School.

Issues

Despite the gradual but steady improvement in Westinghouse Vocational High School over the past seven years, many aspects of the school still need change and development. More clerical personnel are needed to keep records and to handle the paperwork involved in changing the school into Westinghouse Prep Tech. Teachers of occupational subjects strongly suggest that, in addition to the four counselors already present in the school, a counselor is needed for vocational careers.

As mentioned above, more tutors and other support services are needed in the school. As teachers try to maintain high standards for student performance, various factors such as more impoverishment and lack of preparedness render students less able to cope and more apt to fail in this high school. The students are motivated as shown by their improved attendance and increased involvement in school activities. More time and positions must be allocated for support services such as the tutoring program and the homework center, which now serve only a small portion of students who need such support.

Administrators and teachers see the need for more partnerships and exchanges with businesses and universities. The linkages which have been established have been of obvious mutual benefit and have brought a new kind of recognition to the school. The needed partnerships must be established not only for student programs and events, but also for the further training of teachers at Westinghouse. This school has a staff which, for the most part, is in a state of heightened awareness and curiosity about contemporary changes in schools. Their appetites have been whetted for learning how to function under the new definition of vocational education which includes the integration of academic and occupational subjects. What is needed at this moment are people from universities and businesses who can conduct staff workshops on proposal writing, curriculum integration, staff cohesiveness, and whatever else the teachers identify as important to them. Local and national resources must be mustered to aid this school at a time when it is ready and willing to learn.

Brooklyn Technical High School
New York, New York

Setting and Climate

Brooklyn Technical High School has a scholarly presence. It is one of three examination schools in the New York City School system. The students know they have been specially selected for a high quality educational experience; they know a lot is expected of them and they know the legacy of success and accomplishments which has been established by former graduates of Brooklyn Tech.

The aura of scholarship and success pervades the day-to-day operations of this Brooklyn high school. The corridors are quiet during and between classes. Security guards are noticeable only at the entrance to the school. Students sit on corridor floors and read, study, or complete written assignments. Groups sit together preparing for exams, keeping their voices modulated so as not to disturb what is taking place in the classrooms nearby.

The administrative wing, on the first floor, contains the main office, rooms for administrators, and the guidance department. The midsection of the eight story building is dominated by a large auditorium which is equipped with many of the trappings found in an official theatre. Classrooms and offices for the academic and technical departments are spread around the exterior of the building with some large areas set aside for laboratories and shops. A tower, which extends upward for two stories at one side of the eighth floor, is used by a small local radio station.

The principal, who began his administrative role at Brooklyn Tech in 1987, walks through the building nearly every day, noticing the activity, the tone, and the general operations of the school. He remarked that a few aspects of the physical organization need to be changed. For example, in order to encourage teachers in different departments to exchange ideas and plan together, larger rooms will be designated as department offices. This will provide more comfortable spaces for joint planning and the review of new materials. Also most of the guidance offices, all but the counseling services, will be moved to the seventh floor near the student activities offices and the cafeteria. Many of the guidance services overlap with student activities and this will make both facilities run more

efficiently. Also, students will be better able to avail themselves of guidance services during their lunch period.

Mission and Curriculum

Brooklyn Tech is not officially a vocational school. It is a technical school which specializes in the areas of math, science, technology, and computers. It offers a rigorous academic program which is essential to the development of technical knowledge and skills and which prepares students for college entrance. The school is more research oriented than most high schools. The faculty encourages and advises the students to devise their own scientific research projects which are entered into competitions and exhibitions.

Historically, Brooklyn Tech has been a college preparatory school for engineering careers, but graduating from this school with a specialization in any of the areas of concentration usually leads to acceptance and success at a prestigious college. An apt description of the school by one administrator is "a conservative, traditional institution: one where you expect to have homework every day and a test on Friday."

The high level of the courses at Brooklyn Tech is another indication of its exemplary nature. Unlike many other schools in the New York City system, Brooklyn Tech students may wait until grade eleven before they declare a major. All students take three years of math and science and many take four years of these subjects. At least two years of a foreign language are required. Ninth and tenth grade students must take a core curriculum of academic subjects and exploratory courses in engineering technology and computers. Eleventh and twelfth graders major in one of the following clusters: (1) aeronautical engineering, (2) architecture, (3) bio-medical, (4) chemistry, (5) civil engineering, (6) computer science, (7) electrical engineering, (8) graphic communications, (9) industrial design, (10) mathematics and science, (11) mechanical engineering, and (12) technology and the liberal arts.

When students fail a class at the advanced level of these areas, they may have to go to one of the local colleges to make it up so that they can match the level of rigor offered at Brooklyn Tech. Student progress is continuously monitored by the guidance department. Students who are not progressing well may be placed in the holding power program by mutual decision of the parent, the student, and the guidance counselor. When students begin the program, they are given a special schedule in a self-contained class. In the class, motivational techniques are used to support and encourage them. A health resource

coordinator and a social worker are available to lend their support. Generally, when the student shows improvement in attitude and/or motivation, another mutual decision is made for the student to move out of the holding power class into the mainstream. For a while these students attend group guidance classes in addition to their regular schedules. Close monitoring of their progress continues. A few students, about three percent of the school's total enrollment, do not improve in spite of the holding power program and they are counselled to transfer to another high school.

Often the students who have achieved well at Brooklyn Tech are placed in second year college level courses during their freshman year in higher education because they are more advanced than other high school graduates and they have had practical experience in the shops and laboratories at Brooklyn Tech. Ninety-eight percent of the school's graduates go to colleges straight from high school. The other two percent go into the military or straight to jobs and many of them eventually work for a college degree later in their careers.

Students

The school does not need to promote itself. Nothing needs to be done to entice students to apply. There is some articulation with the lower schools; for example, a tour of Brooklyn Tech is conducted each year for junior high school students, and guidance counselors from Brooklyn Tech visit these schools to answer questions. The main focus, however, is on reviewing the plethora of applications, selecting the best students, and giving accepted students a thorough orientation before their freshman year at Brooklyn Tech begins. The staff views the students as a major resource for the school and the society at large. They feel that with the correct training and guidance these students will be at the forefront in solving some of the pressing problems of the state and the nation. With this type of attitude prevailing among the staff and with the legacy of excellence Brooklyn Tech has enjoyed for over fifty years, it is understandable why this is an exemplary school.

All students who have a record of high achievement in the New York City school system are encouraged to take the competitive exam of academic skills which may allow them to enter Brooklyn Tech and the two other examination schools. Other students whose academic records are not as impressive take it also. They know the examination schools are considered to be the best high schools in the system for academic and technical subjects, especially science, and they know there is a chance they may get accepted because there is no actual "cut off score" that separates acceptances from rejections at Brooklyn

Tech. The reason for this "floating" cut off point is the size of the school. Since it has the largest enrollment of the three examination schools, with 4,400 students, it will often take students with lower exam scores than at the other two schools. Students know that if they do not get accepted when they take the exam in grade eight, they may take it again in grade nine for entrance in grade ten. The number of examinees continues to increase. Of the sixty thousand students who enter New York City high schools each year, thirteen to eighteen thousand of them have taken the examination. Almost all of the examinees apply for the twelve-hundred openings at Brooklyn Tech.

The selection process is rather uncomplicated compared to the other schools we studied. Applicants are ranked by their examination scores. They are accepted in rank order, starting with the top ranked students, until all openings are filled. Of course openings continue to occur since some of the students who get accepted at Brooklyn Tech will decide to accept an offer to go to another school. Thus, some students will move up on the acceptance list during the first round of choosing and will be accepted in the second round.

The selection process has yielded a student population of forty percent black, sixteen percent Hispanic, twenty percent Asian, and twenty percent white students. Forty percent of the students in the school are females. The class size is approximately thirty-two students in academic classes and twenty-six students in shop classes. A resource room and other special services are available for some students in the school who are handicapped.

Students from every borough of New York City attend Brooklyn Tech, and their level of participation in the school is remarkable. Along with the faculty, students are members of standing committees which plan the direction and mission of the school and which review and evaluate the curriculum. They are part of a revitalization committee which has written a proposal for funds to expand the area of concentration known as Liberal Arts and Technology.

The student government organization sponsors a number of services including volunteering to help in local hospitals, providing food and toys for homeless persons, and participating in fundraising campaigns for charities. Brooklyn Tech has the record for the highest amount of money raised by one high school in the March of Dimes Walk America.

Staffing

Each of the twelve areas of concentration mentioned previously is administered by an assistant principal. Other areas to which assistant principals are assigned are the budget, guidance, and administration.

Finding qualified persons to teach at Brooklyn Tech has not posed a problem in the past but it is getting more difficult. Those teachers with degrees in engineering who leave Brooklyn Tech are most difficult to replace because engineers can get jobs in many other work settings. The school attempts to recruit some teachers from persons who have retired from engineering and other technical careers. Also, Brooklyn Tech participates in the Substitute Vocational Assistant program described earlier.

There are two-hundred and fifty staff members at the school. A majority of them are males, so part of the strategy for recruiting teachers has been directed toward identifying more female candidates.

Linkages

Parents and alumni show a remarkable amount of support for Brooklyn Tech. At times when other secondary schools lacked parental involvement, the parents were actively involved. They aided in the search for a new principal, waged a campaign to increase the resources for extracurricular activities, and publicized the school to colleges and universities to let them know how well prepared the graduates of Brooklyn Tech are. In their interactions with the students, parents stress high achievement in academic and extracurricular activities, service to the school, and service to humanity. They arrange SAT/PSAT coaching for the students.

Parents have become deeply involved in policy issues such as maintaining a rigorous schedule of homework assignments for the students. Even though the parents are widely dispersed throughout the five boroughs of New York City, fifty percent of them attend the meetings of the Parent-Teachers Association. Many work in the school voluntarily. The principal notes that during a recent hearing to suspend a student, the parent supported the school in suspending the child. Parents and administrators are in agreement that disciplinary measures should be swift, fair, and strong.

The alumni association also has a record of promoting and supporting the school. It publishes a newsletter that describes programs and changes which have occurred at the school and follows the careers of Brooklyn Tech graduates. Job openings in technology and many other fields are listed. The newsletter is used as a vehicle to develop and encourage linkages between the school and the businesses of the fifty thousand living alumni. A new activity which has begun in the newsletter is publishing a list of alumni who are related to one another. This allows present students and graduates to see the increasing tradition of families in which many share the Brooklyn Tech experience.

Linkages and programs developed by the parents and the alumni of Brooklyn Tech have aided the school in maintaining its superior facility and course of instruction. Facilities such as the strength of materials lab, the foundry, the technology labs and the computer labs are quite expensive to run. Equipment must be updated often to keep up with expanding knowledge and skills in the technical fields. Support from parents and alumni have helped to ease this burden. The administration of the school feels that these two organizations make a significant difference which sets Brooklyn Tech apart from many other secondary schools.

Efforts to link Brooklyn Tech with various companies and organizations have been successful. For example, a leading architectural firm has established a partnership with Brooklyn Tech in which students visit the offices of the firm to learn about all aspects of architectural design. The firm has assisted the school in developing a computer aided design laboratory and has provided the school with some equipment.

The Tri-Tech Educational Collaborative is a partnership between Brooklyn Tech and five of New York's technical colleges. College related experiences including seminars, courses, and guest lecturers are provided for the students. Participation in this program has contributed to the winning record of Brooklyn Tech students in contests and competitions such as the Westinghouse Talent Search and the Citywide Science Fair.

Issues

One aspect of exemplary education which has yet to be put into effect in this school is the articulation of academic and technical subjects. Using large comfortable rooms for department offices, as described above, will help to facilitate the necessary interaction. For meaningful joint planning to become an integral part of Brooklyn Tech, it is essential that

parents, students, teachers, and the fifteen assistant principals devise innovative ways in which academic and technical skills can be taught and learned together. The principal favors a collaborative model of school management where administrators and teachers share responsibilities together on committees dealing with both academic and management issues. The revitalization committee, mentioned previously, may be a good conduit for such innovations at Brooklyn Tech.

Another area of concern is the funding of innovative and exemplary programs. The technical faculty at Brooklyn Tech attempts to stay appraised of city and national trends in the labor market and in funding priorities in the area of technology. With this knowledge, they write proposals for funds from the Vocational Education Act which are in line with labor priorities and which reflect the needs of the school. However, the staff has taken note of the many times special funds are awarded to those schools in which students are doing poorly. While they understand the need for such awards, they hope that in the future there will be some special funds for schools such as Brooklyn Tech which have consistently remained exemplary in educating young people for the type of work that has a crucial impact on society.

For instance, in order to maintain the high quality of education in light of new requirements from the New York Board of Regents, one item which needs funding is an extra instructional period. Additional requirements such as a course in Global Studies for all students will be difficult for students to add to their already full schedules unless more instructional time is granted.

Additional guidance services are also needed at the school in order to maintain the practice of pairing students with one guidance counselor for their entire stay at Brooklyn Tech and adding a college counselor to the pairing when the student reaches the senior year. This type of coverage, which includes individual and group guidance sessions for each student, acts as a safety net to catch academic and behavioral problems so that they can be solved in their earliest stages. It can be maintained at this level only if more guidance personnel are available.

Manhattan Center for Science and Mathematics
New York, New York

Setting

The Manhattan Center for Science and Mathematics (MCSM) is located on 116th Street and Franklin Delano Roosevelt Drive in Spanish Harlem. The three-story brick structure, which faces the East River, occupies almost an entire city block. The school has a new sign above the entrance, which is visible from FDR Drive.

The MCSM has earned a reputation for strong academic preparation by achieving a one-hundred percent college acceptance rate for its graduates. Colleges and universities are impressed with the school and recruit its graduates, who are awarded $350,000 in scholarships each year. Ten to fifteen teachers volunteer to serve on a scholarship committee. They collect financial aid materials, decide which students should apply and which should be recommended for financial aid based on need, and then they work with students through the application process. They also solicit scholarships from private companies and professional societies.

An example of the high quality education MCSM students receive is shown in a story related by one of the assistant principals. She said that a professor at Vassar College called her to say that in her calculus class only two students understood the material. The two were both MCSM graduates, who ended up tutoring the other students in the class.

The school boasts a higher attendance rate than the citywide average, even though many students travel long distances to get there. The school also has a low dropout rate (under two percent). There are few discipline problems, no graffiti, no litter, and no students in the hallways during classes.

The MCSM is successful partly because the students who attend the school are highly motivated. They are students who show promise, but are not necessarily the top students in the city. The top students apply to and are accepted by the three examination schools—Stuyvesant, Bronx High School of Science, and Brooklyn Technical. Many students apply to those schools, but a relatively small number are selected. MCSM was created because the need for another college preparatory science-oriented school became evident. In the fall of 1988, MCSM received six thousand applications for the three hundred

ninth grade seats and seventy-five tenth grade seats available. Students who are selected, needless to say, feel very special.

Equally important to the school's success is the positive attitude teachers at MCSM have toward their students. They expect them to do well and, consequently, these expectations bring about changes in student behavior—the students begin to believe in themselves. Students agree that "teachers take time out to help you." A sophomore said, "They care. Teachers help you get into college. If you score low on the PSAT, they help you."

Coursework is very challenging, but support is available for students having difficulty. Teachers volunteer their time to help students early in the morning before classes start, during their lunch hours and preparation periods, and after school. In addition, peer tutoring and counseling services are available for students.

Success is also attributed to the size of the school. With 1376 students, faculty believe that the school is at its maximum size. A faculty member explained, "Our small size is an asset; we're personally involved with our students." Another added, "We nurture kids here; we're smaller and not as competitive as the exam schools. Kids need the warmth, the one-on-one." Yet another faculty member told us about last year's valedictorian, a smart but quiet girl who "got all the extras because we're small—in a large school this student may have been overlooked." Teachers feel that individual attention must be given to students, and with larger numbers that kind of personal attention would be impossible to provide.

Leadership is another factor that is mentioned in regards to the school's success. Teachers feel they are supported by the principal in finding ways to improve the curriculum and the school. The principal is open to new ideas and is not afraid to make changes. An assistant principal said, "She never says, 'You can't do that,' or 'It won't work.'"

The way in which the school developed also helped promote the individualized attention that each student receives. The school opened its doors with one-hundred and fifty ninth graders, and each year added a new freshman class until it reached its current capacity. The junior high school and the elementary school programs in the building have also remained small for the same reasons. Each program has two-hundred and fifty students.

Development of the School

The Manhattan Center is a six-year old dream come true. It is housed in a building formerly known as the Benjamin Franklin High School, which had such serious problems that school officials decided to close it. Ben Franklin High School in the 1970s was known as a drug haven. It had poor student attendance (forty percent), a high dropout rate, poor achievement, and numerous discipline problems. The former high school superintendent, who had been an assistant principal at Ben Franklin, said the school was a disgrace and the only solution was to close it down and redesign it.

Students and faculty of the Benjamin Franklin High School were reassigned to other schools, and the process to design a new program began. Two districts were involved in the planning—Community District 4 and the High School District for Manhattan. This joint effort, which was unique in the city, resulted in reopening the school in 1982. The new school would be the only school in the city that included Kindergarten through twelfth grade. The elementary and junior high school programs in the building serve, to some extent, as feeders to the high school. The principal explained, "A love for science and mathematics must begin in the elementary school."

Climate

The school's climate is described by teachers as "good, safe, caring, warm, and nurturing." Their comments included the following:

> "This is the kind of place where you can have fun learning. We have a family environment due to the staff, especially those who started the school. They have invested in it."
>
> "Our small size is an asset. We're personally involved with students."
>
> "This school is a safe haven—a place to learn. People here, for the most part, treat children with respect and love—they let it show through. Kids are happy to see an adult."
>
> "The school is here for the youngsters, and they know that."

The school's climate is described in similar ways by students:

> "The school is warm."
>
> "It's never boring; most always exciting. It makes you want to get up in the morning—I can't be late!

"It's not too demanding—if you fall behind you can catch up."

"Teachers care. They take time out to help you."

Much of the credit for the positive school climate is due to the principal, whose own leadership style is positive, warm, upbeat, and supportive. She is the school's second principal and has been at MCSM for three years. Her philosophy of education, particularly of urban education, permeates all that goes on in the building.

She believes she has the finest staff and students in the city of New York. "We will be better than Bronx High School of Science," she claims. She also believes that all students in her school can meet the standards set for them. She doesn't allow students to take the easy path; she pushes them to reach for goals that are difficult, but possible to achieve with hard work. "We try to give the kids here the same opportunities we'd give our own kids," she explained.

The MCSM is safe and orderly. Students know the rules and follow them. In several of the classrooms, the following list of six school rules was found posted on the bulletin board:

1. No radios.
2. No hats—on anyone!
3. Keep moving.
4. Remain in homeroom.
5. Show passes.
6. Show program or ID card on request.

Students know the rules and follow them. There are no students in the hallways during class periods. Attendance is high, and students take the job of learning seriously. One student explained, "The strictness here helps you think about your future." Another student said, "People don't tolerate kids hanging around in the halls or goofing off. In the neighborhood schools kids are cutting classes, but not here. The kids here are motivated." Yet another student stated, "Teachers care for you here."

Students

The MCSM is an options school open to all eighth or ninth grade students in New York City who choose to apply. However, priority is given to residents of Community School District 4 (East Harlem) who meet admissions criteria. These criteria include no failing grades on a student's record, report card grades of eighty in science and mathematics, and standardized test scores in reading and mathematics that are on or above grade level.

The 1,376 students enrolled at MCSM are ninety-eight percent minority—primarily Hispanic and Black. Over half of them live in East Harlem, and at least seventy-five percent are from low-income families. Students choose this school for two reasons: (1) its emphasis on a specialty area—science, mathematics, and technology; and (2) its college prep curriculum. Students reported that they selected the school because it has a good reputation. They said, "You get a lot of academics, but computers and electronics are the drawing card." Students also mentioned extracurricular activities and helpful teachers as attractive features of MCSM.

The school has achieved a one-hundred percent college acceptance rate for its graduates, with ninety-seven percent enrolling in college immediately after graduation. This is remarkable given cultural and family pressures on students to enter the workforce right after high school, to stay close to home, or to get married at an early age.

The students enrolled at MCSM have good study skills, which are taught in the summer before they enroll at the school. Expectations regarding scholarship, study habits, discipline, and attendance are made clear during the program. When the student enters the school as a ninth or tenth grader, the groundwork has already been laid and the school ethos has been defined.

The school has an equal number of girls and boys. There were eighty-six special education students enrolled in the fall of 1988. These students meet somewhat less stringent admission criteria and are mainstreamed into computer and technology courses, but usually not into mathematics and science courses. The MCSM also provides Spanish bilingual classes.

Teachers at the MCSM believe they have exceptional students. The assistant principal for English explained that the students are not much brighter than average students,

but they are highly motivated achievers. "We have the best children in New York City," she reported. "When students can choose their school and feel they are special, they begin to believe it," she added.

The students have very positive feelings about their peers. They know that the three examination schools in New York attract the top students, but students at the MCSM feel kids try harder at their school. As one student said, "The exam schools are good academically, but kids there don't work as hard as they do here." Another student added, "There is too much competition at those schools. Students here cooperate."

Mission and Curriculum

An assistant principal described MCSM as "a school preparing American youngsters for careers in science and technology." She said that this mission is important if the United States is to compete with other countries. "The current pool of employees is inadequate. Our students will have good jobs," she added.

The school's mission is to prepare youngsters for college. Another assistant principal explained, "We give kids the dream that they can get there. It would be immoral on our part if we did not help them become competitive for the best colleges and universities." This obligation not only includes instilling aspirations in students who might not be encouraged at home, but also working hard to help students meet those expectations. Manhattan Center teachers believe that the obligation does not end with the student's admission to college. They provide personal follow-up and support to students who have graduated to help them stay in college and receive their degrees.

The MCSM was designed to provide opportunities to good students, primarily from the East Harlem community, who were unable to get accepted into the three examination schools in the city. The MCSM requires students to take all of the courses required by the Board of Education, as well as additional science, math, and technical courses. MCSM students must take four years of mathematics, four years of science, three years of a second language, one and one-half years of computer science, and one and one-half years of technical education. School staff said they are constantly working on curriculum development because technology is constantly changing.

Students are grouped in classes heterogeneously. An assistant principal said, "We frown upon tracking. All of the courses we offer are Regents level because we aim to get

every student accepted into a two-year or four-year college or program to further their education." Another assistant principal added, "We refuse to track students. We offer Regents level English for all (including special education). English Technical Writing is offered in addition to Regents English, not *instead of*." The principal concurred, "I believe every student can do well here. I don't believe in modified classes—once kids are in a track like that, they're in it forever."

The school's curriculum is designed to produce a well-rounded student. Academics are not the only concern. The principal believes that school consists of more than learning facts when she states, "Students need to learn how to think and how to find things out." An assistant principal added, "A good high school should not prepare a student specifically for a career. It should, however, provide application with theory so that students can get to know what the real job is like." He concluded:

> We don't want to give our kids all academic courses—they need hands-on too. A student from MCSM can do anything they want to or be able to learn whatever is out there. We teach them study skills to be successful and we teach them to be aggressive.

Another assistant principal said that the school's mission is to have every child reach his or her fullest potential. She added, "We want them to become productive citizens, and we hope they will continue their education when they leave us." On the same note, the principal hopes to establish a community service requirement for graduation. She is concerned about the moral development of students. "Life is more than taking," she said.

The MCSM offers a full and diverse athletic program with twenty varsity and junior varsity teams, a dance studio (the Repertory Dance Company of East Harlem is housed in the school), offerings in art and music, computer-assisted drafting, a photography lab, an electronics lab, drafting rooms, a student health center, a greenhouse, and two computer laboratories. The school's philosophy is that students need to have balance in their high school experience—that academics and technical subjects help round out the individual, and that sports and the arts will enhance a student's quality of life. Faculty and administrators hope that this well-rounded experience will enrich students' lives and help them succeed in college and beyond.

Special programs at the school include Science/Math Research, the General Electric Scholars Program, and the Mount Sinai Scholars Program. In the Science/Math Research

classes, students develop projects for math and science fairs in the hope of competing for Westinghouse Scholarships.

The Science Research courses provide students with opportunities to use the scientific method. The instructor of one of the classes encouraged her students to think like scientists and develop research skills with the following questions and statements:

> How can you explain . . . ?
>
> Don't fudge the results. That's how discoveries are made.
>
> What is important is *how* you got the results.
>
> None of you were really wrong. You all gave good possible explanations. Your ideas were all very logical.
>
> There are no correct answers at this point. You're still brainstorming.

The General Electric Scholars program, which is for students interested in careers in technology and engineering, pairs a student with a mentor at General Electric. The program provides one-on-one mentoring as well as preparation sessions for the SAT and after-school science writing workshops.

The Mount Sinai Scholars Program was developed from a need to increase the number of minorities in the medical profession. Students selected for this program work at the hospital, attend a summer program at a prestigious university, and receive counseling to prepare them for pre-med and medical programs. Students participating in the program are ensured positions at the hospital when they graduate from medical school. Last year, twenty-five students participated in this program and spent the summer at Vassar College.

When the school opened, it operated on a nine period day and all students were required to take three semesters of computer science and three semesters of technology courses. Budget cuts caused the school day to be cut back to eight periods, with the result that students now take only two semesters of each.

Teachers would like to integrate occupational and academic concepts into other courses, but find little opportunity to do so now that the main concern is meeting Regents requirements for graduation. Some efforts, however, are being made. English teachers are beginning to have their students use computers for writing their assignments, and math teachers are using computers to prepare students for the SAT test. Teachers would like to

have their students write and publish a science journal. They have also been grappling with the question, "If you are a Science/Math school, then what skills do students need?" At in-service meetings they have generated the following response: Students need the ability to question, hypothesize, test, analyze, and write results. Teachers of all subjects are now trying to incorporate these skills into their teaching.

The summer program provides a good opportunity for teachers from various disciplines to create a program that incorporates math, science, language arts, and social studies. One summer the theme was the neighborhood. Math classes conducted a research project on traffic patterns in the neighborhood. They used the library, wrote results on the word processor, and published the study.

There are a number of natural tie-ins between science courses and technology courses at the school, though, as of yet, formal linkages have not been made. The current organization has the technology department located within the math department. Teachers see a need to involve science and technology teachers in a more formal way to plan course content and work on cooperative projects.

Occupational Courses

Computers and electronics are specialties that draw students to the MCSM. These courses include a good deal of hands-on instruction in the laboratory. The electronics courses require students to develop hypotheses, test their theories, and report their results. Teachers guide students but do not provide "answers." They encourage student questioning and experimentation and at the same time communicate a body of knowledge and the theories students need to know.

In the fall of 1988 plans were being made to establish an exploratory sequence of courses for new students. Each new student would have four different occupational experiences in computers and electronics over the course of a school year.

Academic Courses

Teachers for the academic courses also have high expectations for students. They try to teach all of the subject matter that students in prestigious public and private high schools would encounter. The head of the English Department told us that some students don't read well when they enter the MCSM, but by their junior year they are reading

Thoreau and Emerson. "They're proud of themselves," she said, but went on to explain, "They must compete in college with students who have gone to private schools, who have libraries at home, and who have travelled to Europe. We must expose them to classical literature."

The faculty believes that students need to get the same background as students attending the best high schools, both public and private, in order to compete for college admission. Consequently, students at MCSM are required to read more of the classics in their English classes, study more history in their Social Studies classes, and get more general background in all of the courses they take. Students in the top schools often have the advantage of academic support, encouragement, and stimulation at home. For many MCSM students these opportunities are missing from their experience. Faculty at the school attempt to provide as many experiences and as much support as possible to help their students favorably compete.

Staffing

Faculty were selected for the Manhattan Center through applications and interviews. Very few of the teachers were employed at the school when it was known as Benjamin Franklin High School. The average age of MCSM teachers is lower than that of teachers in other New York City High Schools. Teachers often wear several hats at the school because the school is so small. One assistant principal said, "Everyone is doing multiple tasks here. The teachers are great to work with. We have good people at the top and a good staff; their satisfaction comes from the performance of the students."

Monthly staff development meetings are held by departments. The topic for October of 1988 was grading. Each month the topic changes. Staff development for new teachers is accomplished through a mentoring program in which a superior teacher serves as a mentor for a new teacher in the department. The senior person is released for one period a day to work with the new faculty member.

Three of the school's science teachers had an opportunity in the summer of 1988 to participate in an internship program at a pharmaceutical company. They participated in scientific research and received a stipend for six weeks. They reported that this experience improved their teaching, increased their knowledge of what is expected in the scientific workplace, and is helping them give better career advice to their students.

The principal describes her faculty as very good and very idealistic. "I don't want anyone to tell me, 'I can't'." She praises her teachers for their humanistic approach to students. "If they don't have it, they can't work here," she concluded.

Classroom visits supported the principal's appraisal of her staff. Teachers at MCSM are professional, articulate, and energetic. They are on their feet actively communicating with students. They encourage students to ask questions, and work to involve them actively in the lessons. They provide positive reinforcement to students and demonstrate warmth and good rapport with students. They don't talk down to students. They seem to enjoy teaching and possess a sense of humor.

Linkages

The MCSM has a number of connections with business, industry, and academia. They include the General Electric Scholars Program, the Mount Sinai Scholars Program, IBM Mentor Program, and teacher and student internship programs sponsored by Merck Pharmaceutical.

When the idea for the school was created, the principal and district superintendents invited leaders in science and technology to form an advisory board. This board was instrumental in working with staff to design the curriculum and in equipping the computer, photography, and electronics laboratories. The members of the board served as mentors to students. Several businesses sent people on loan to the school. For example, IBM sent a mathematician, a computer software specialist, and a systems analyst who each spent six months to one year helping the school develop its labs. IBM also employs students in the summer.

The current principal is in the process of reactivating the advisory board for several purposes: to advise on curriculum matters, to develop mentoring programs for students, and to provide training and internships for faculty. She hopes teachers will be given more opportunities to upgrade their scientific knowledge base in business and industry because "schools can become antiquated quickly." She wants the mentoring program to be expanded to social areas. If a mentor can take a student to a nice restaurant for dinner, to play tennis, or go skiing, then the student will be able to learn some important social skills that will help him or her fit in better at prestigious colleges. The amount of culture shock will be reduced. She also wants to pair up students with mentors in their university towns,

because she believes that MCSM's obligation to students does not end when the student graduates from high school.

The MCSM has excellent ties with universities and colleges in the New York area. Teachers College at Columbia University and Hunter College already provide summer courses for students at the school. Other universities offer college credit for math courses taken by MCSM seniors.

Student employment during the school year is discouraged because of the heavy course load, homework demands, and the focus of the school on college preparation. Instead, summer work experiences and internships are encouraged.

Parent involvement is difficult to achieve because many students do not live in the neighborhood. Also, many students come from single-parent homes in which the parent works full-time. Contacts with individual parents by teachers and administrators, however, have been very positive. The community in East Harlem is supportive of the school, probably because the school came about because of community concern over the lack of an academically-oriented high school in East Harlem. They now have a school they can be proud of.

Issues

The greatest concern of faculty and staff is that of funding. Because the MCSM does not have students below level in reading and mathematics, the school is ineligible for remedial or compensatory funds. Because the dropout rate is low, the school is ineligible for program funding to improve attendance and retention. School staff report that the schools which are doing the poorest jobs are receiving the monetary rewards, while their school, which is doing an excellent job, is ignored. "When you have kids on level, you don't get extra support," explained an assistant principal. Because the New York City schools define vocational education as preparation for work immediately after high school, the MCSM does not receive much vocational funding. Their electronics and computer labs are not funded and cannot be upgraded. "We are penalized every step of the way for being good," concluded another assistant principal.

MCSM is short on textbooks in every subject. The Board of Education funds the school at $25 per student each year, but for $25 the school can buy just one textbook.

Each year the school phases in one text, but they are far behind meeting new Regents requirements for new textbooks in every subject.

The science laboratories, which are the heart of the instructional program, are inadequately equipped. In 1988-89 the science allotment was cut in half at all New York City high schools. Teachers are forced to purchase consumable materials out of their own pockets because the school's budget for science supplies is so meager. The laboratory for the Science/Math Research classes is a makeshift lab at best. The room is too small and it is not equipped for students to carry out their own research projects. Students also reported that lab equipment is a major need in the school.

The computer labs need software and the technical classes need supplies, but there are no funds with which to purchase them. In October of 1988, four special education classes were using the technology lab. The supplies, we were told, would run out in "a week or two." For the remaining eight months of the school year, there would be no supplies for the lab. The school just instituted a music program, but there is no money to buy musical instruments.

The cut from a nine-period to an eight-period day has also had repercussions. The school program now has less versatility. The number of electives has been seriously limited by the shorter school day. Students are also limited to fewer computer science and technology courses. There are new elective courses such as Scientific Literature and Science Fiction that teachers would like to add, but this is no longer possible.

Budget cuts have also resulted in staff reductions and higher class sizes. Faculty members are overworked with classes of thirty-four to thirty-eight students and with the loss of auxiliary staff to do all the nonteaching tasks that helped to make the school successful. As the school gets larger, the resources are reduced. The MCSM needs a person to coordinate the student internship programs, another to coordinate guidance/career activities, and another to take care of extracurricular activities. Students also said that more teachers are needed for various activities. Other needs students saw included a return to a nine-period day, money for tutorial programs, and money for sports equipment. (One teacher spent $2000 of his own money for football uniforms.)

Conclusion

The MCSM is successful for a number of reasons: high expectations for students, a caring and nurturing staff, and a leader with vision who is able to get people to work together toward a shared set of goals. The community feels a sense of ownership in the school. "I take a back seat as a principal and let them take ownership and feel pride in the school," explained the principal. The former high school superintendent said, "She has extraordinary skill in bringing people together."

Another factor in the school's success is the staff's commitment to students, even after they graduate. An assistant principal said that teachers encouraged the first graduating class to apply to several colleges, including those out-of-state. When students began to receive letters of acceptance, they were elated. But a week later, a cloud of depression hung over them all. The teachers discovered that parents were not supportive of their children leaving home. Hispanic parents were especially concerned about distance. The teachers had to plead with a number of parents to allow their youngsters to go away to college.

One young man was accepted to an excellent school out of state. His mother wanted him to stay at home. After one semester in college, the student dropped out of college and joined the Army, which is a more acceptable reason for leaving home. He sent the assistant principal a letter and a photograph of himself in camouflage attire. He said he still plans to finish college. She believes he is taking this path to college as the only acceptable cultural route, and she has offered to help him apply for ROTC scholarships.

The school's achievements, as the story above shows, are not solely academic. A classroom poster seems to sum up the school's philosophy and motto: "Nothing is as easy as it looks."

Southern California Regional Occupational Center
Torrance, California

Anne E. Just

Background

Located in Torrance, California, in southwestern Los Angeles County (called the South Bay area), the Southern California Regional Occupational Center (SCROC or the Center) is a major provider of vocational education and career preparation for area high school students and adults. Several factors account for this role.

First, SCROC has been in existence for twenty-two years. Second, the Center is geographically well located for students from local public and private high schools, for adults working in South Bay businesses and industries, and for employers seeking to hire locally. Third, SCROC has established credibility with employers for training job-ready applicants, with school districts for enhancing student performance, and with students for occupational skill development and job placement.

However, this case study differs, as does the one describing the Jane Addams High School Entrepreneurial Program, from others included in the paper. The Addams case study describes one program within a school. This case study is a description of a physically separate training and education center organized into twelve divisions offering forty-five occupational programs through sixty courses provided in multiple class sessions to adults and to high school students from six surrounding school districts.

SCROC itself does not look nor operate like the other schools in this report. It serves a largely suburban, non-inner-city, mixed ethnic, racial, and socioeconomic status (SES) population. It does not qualify as a "home" school campus with sports teams, cheerleaders, or organized extracurricular activities. Students attend class at SCROC only three hours per day. They enroll in SCROC courses for only one or two semesters. They are either bused or drive their cars to and from SCROC. In fact, there may be those critics who will dismiss SCROC as an "old-style" vocational training center offering a little bit of everything for everyone with only entry-level positions as the reward for student efforts.

Despite this, SCROC is a valuable study site for several reasons. The obvious ones relate to geography and demographics. SCROC is located in the Los Angeles metropolitan

area with the second largest general and school age populations in the country. California, the most populous state, is experiencing major demographic changes with the influx of Hispanic and Asian immigrants. Their presence has a tremendous impact on public school enrollments, course content, and teaching-learning techniques. Yet, one SCROC administrator notes, "Bigger school districts are consulted when change occurs. We are forgotten. That's unfortunate because smaller independent districts are easier places to make changes happen."

In addition, California has used the regional occupational center model of delivering vocational education for over twenty years. This model has several noteworthy features. The extended school day, from 7 a.m. to 10 p.m., is broken into four three-hour segments. Three-hour daily classes for either one or two semesters provide students with intensive opportunities to learn, study, and practice the occupational skills taught. Unlike high school teachers, SCROC teachers have a two-hour block between classes to visit local businesses and industries to keep abreast of occupational changes and needs. Finally, evening and Saturday classes are most useful for adults and for high school students who wish to complement their academic classes with vocational courses.

Of particular interest is SCROC's purpose. Center administrators and faculty firmly believe that vocational education and career preparation are needed for students of all socioeconomic, racial, and ethnic backgrounds. Yet their work is cut out for them as they constantly fight the "bad image" usually preceding and accompanying vocational education. Undaunted, SCROC staff work slowly and continually with feeder high schools to reduce vocational education prejudice. For example, they discuss with high school administrators and teachers changing labor market needs and career opportunities for skilled employees without college educations. They point out to academic personnel links between academic education and nonacademic training to minimize the gulf between the two areas.

Location and Setting

SCROC has its Center facilities in the city of Torrance, sixteen miles southwest of the Los Angeles Civic Center, seven miles northwest of Los Angeles Harbor, and eleven miles south of the Los Angeles International Airport. With 135,400 residents, Torrance is the fourth largest city in Los Angeles County.

SCROC was created through the cooperative effort of six independent school districts in the South Bay area. From north to south, they are as follows: (1) to the northwest, El Segundo Unified School District; (2) to the northeast, Inglewood Unified School District; (3) Centinela Valley Union High School District; (4) Torrance Unified School District; (5) South Bay Union High School District; and (6) to the southwest, Palos Verdes Peninsula Unified School District.

The Center's service area includes fourteen cities and the surrounding unincorporated sections of Los Angeles County. The area's estimated population of 650,000 includes a wide spectrum of SES, ethnic, and racial groups. Inglewood, the northernmost city in SCROC's service area bordering on the city of Los Angeles, is considered an inner-city area. The Inglewood school district serves predominantly minority and low SES students. To the south, the affluent cities of Palos Verdes and Rolling Hills send primarily Caucasian, middle and high SES students to high schools in the Palos Verdes Peninsula school district. The other school districts largely serve mixed-SES, ethnic, and racial groups.

The South Bay area is replete with businesses of varying types. Several major automobile manufacturers including Nissan, Toyota, and Honda have located corporate headquarters in the area. Their arrival has given rise to new business parks and office facilities. The aerospace industry is strongly evident as TRW, Northrop, Hughes, and Rockwell have major facilities here. These companies, with numerous government contracts, are significant local employers. Health care and petroleum industries, well-represented in the area, also have large workforces. The construction of two new large shopping malls and the expansion of a third have helped the area's retail trades grow dramatically.

The Center is situated on land donated by the Torrance Unified School District. The land was originally owned by the City of Torrance and used by the U.S. Navy as a munitions dump. The ample site easily provides room for a compact "campus" of five buildings, a horticultural area in front of the buildings, and a large student parking lot behind the buildings.

Building space is primarily devoted to classrooms and training areas. The largest, the Trade and Technology Building, houses the training facilities for three divisions—electrical-electronics, metal-machine, and transportation-mechanics. The streamlined

administrative offices comprise only a small portion of the second largest building. The rest of the building provides classrooms for the business, commerce, data processing, graphics, and health services divisions. The three remaining buildings are used for the agricultural services, personnel services, and maintenance and operations division.

There is space for expansion should the need arise. Current plans for 1989-90 include leasing part of the horticultural area for the development of a retail strip along the street in front of the Center. The strip will provide retail locations for on-site, on-the-job training (OJT) experiences for SCROC students.

The classrooms and training areas, in general, are well-sized and well-equipped. Space is available for several types of training and learning experiences to occur simultaneously. There is ample room and equipment for each student to have an individual work area (as needed per subject field) or to work in a small group for easy sharing of or rotation on selected, specialized equipment. SCROC prides itself on keeping as up to date as possible with equipment and machinery given some budgetary constraints. Often such items are donated by civic groups or by nearby industries, or sold to the Center at a considerable reduction of price.

Development of the Center

SCROC has a twenty-two year track record and historical base in the South Bay area upon which to build. Organized in 1967 and built with a special tax levy, SCROC is the first Regional Occupation Center or Program (ROC/P) started by the State of California. Legislators and educators met to design the Center, which became a model for the other centers and programs that followed. SCROC has been visited by people from all over the world.

The sixty-nine ROC/Ps statewide train high school students, out-of-school youth, continuation high school enrollees (dropouts returning to school), and adults to become gainfully employed. SCROC, like other ROC/Ps, provides entry-level job training and employment preparation.

The State of California funds ROC/Ps through public school apportionment. For each 525 hours of student attendance, a ROC/P receives credit for a unit of Average Daily Attendance (ADA). ROC/Ps earn different incomes for each ADA generated.

Existing ROC/Ps have three administrative formats. Four are operated by individual school districts. Twenty-four are administered by Joint Power agreements covering two or more school districts. County Boards of Education and the County Superintendent of Schools operate the remaining forty-one ROC/Ps. SCROC functions under a joint power agreement with six independent school districts and is considered an extension of these districts.

SCROC began training in February, 1968, by offering the following six programs: Medical and Dental Assisting, Major Appliance Repair, Welding, Data Processing Equipment Operation, Data Entry, and Office Occupations. The addition of the Trade-Technology Building in September, 1968, allowed for training in twelve other major programs, including several automotive repair fields, Electronics, and Machine Tool.

By 1973, additional construction and reorganization of existing space provided facilities for five more programs: Emergency Medical Technician, Hospital Occupations, Graphic Design, Technical Drafting, and Computer Programming. In 1974, South Bay business people and industrialists assisted the Center to develop satellite programs in the community. This community classroom approach provides students with "live," current OJT opportunities.

In 1982, SCROC, with the concurrence of its six cooperating school districts, began to offer programs on area high school campuses. Thus, students unable to attend the Center in Torrance may still receive vocational education at their home school sites. Currently, in 1989, SCROC has twelve divisions offering sixty courses on-site at the Torrance Center and fifteen courses off-site on local high school campuses.

Climate

Teamwork, professionalism, and responsibility are the operative words to describe the climate at SCROC. These descriptors apply to the behavior of the superintendent, administrative staff, teachers, and students. Tours of the facilities, observations of classes, and meetings with teachers, students, and administrators confirm that SCROC employees and students not only understand these mores but eagerly incorporate them as their own.

SCROC's brochure provides the first clues to the Center's emphasis on student maturity, responsibility, professionalism, and collegiality. For example, words and

phrases like "maturity," "adult," "standards," "real working conditions," "appropriate to the occupation," "job performance," and "regular attendance and promptness" pepper the document. These are not just words, however. They describe, in fact, the ethos underlying the behavior and performance of both SCROC students and staff.

In touring the Center's facilities and observing classes in most programs, teachers model appropriate occupational dress, appearance, and behavior. They have high standards for and expectations of students in these same areas as well as in the acquisition of job or training competencies, regular class attendance, and punctuality. Standards, rules, and expectations are put in context and related to the work world to enhance student understanding of their responsibilities and to facilitate their exercising mature, professional behavior.

For example, no class bells ring. Students are expected to take responsibility for arriving to class on time. Tardiness is not a problem at SCROC. Class breaks of specific lengths are announced by teachers and students return punctually. Yet, during the class breaks and between class sessions, students are lively but respectful of other classes which are in session. Many SCROC high school students display a balance between youthful vitality and young adult maturity and responsibility. Teachers confirm that this balance emerges in most students attending SCROC, possibly as a result of the mix of adults and high school students in all SCROC classes.

The atmosphere of collegiality and cooperation is intended to reflect real life work settings. It is enhanced by the teachers' roles in the classroom. They effectively combine authority figure/supervisory functions with those of mentor/colleague. Teachers circulate among the students to supervise the classroom, to answer questions, and to critique performance. They readily volunteer or are on call for one-on-one student assistance. Both students and teachers actively participate in and welcome opportunities for individualized student-teacher interaction. A teacher explained that she directs her attention to the students who try to be invisible. "Teachers do that here—nurture a talent or glow they happen to see. If they don't have it when they come in, they'll have it in a short time. A lot of personal counseling goes on," she added.

Students consistently commend the variety of teaching and learning techniques and the contextual framework SCROC classes give to the importance and value of academic subjects. They especially praise the dedicated, caring SCROC teachers who take time to

know class members as students and as people, and are available for individual help. One board member describes SCROC as a "haven," a place that gives students positive self-esteem. She recommends SCROC to parents she meets and adds, "There is a warm, comfortable feeling here—a pride in the campus." Another board member, who is planning to take a SCROC course in the Office Machines program, said, "I love coming here."

A relaxed order pervades classrooms. Students are eager to learn and enjoy doing so. Teachers take their work seriously and enjoy teaching and mentoring. In support of this, another SCROC board member said, "In a regular district you see this caring in grammar school. By high school, you've lost it. Teachers see kids only one period a day. At SCROC, you spend more time with them."

Students

SCROC has a current student enrollment of approximately 4,077, 2,248 high school students, 1,829 adults. Approximately equal numbers of males and females attend SCROC courses. Fifty-five percent of SCROC high school students and forty-five percent of adult students are from minority groups. Special education students constitute nine and one-half percent of enrollment. One teacher said that SCROC is unique because of the ethnic and economic diversity in the South Bay.

SCROC serves twenty-one local public high schools in the six cooperating school districts. Eighteen nonpublic high schools (eleven parochial, seven private) also send students to SCROC for training. Some adult students (those over eighteen years of age) come to the Center from seven continuation high schools serving re-enrolled dropouts and from seven adult schools (providing academic courses) operated by the six local public school districts. Other adult students who are employed, underemployed, or unemployed come from the general community, often referred by current or potential employers, family, or friends.

Classes for high school students are primarily offered in the following three time periods: (1) 7:15-10:15 a.m., (2) 1-4 p.m., and (3) 4-7 p.m. Free bus transportation to and from feeder high schools is provided to students. SCROC also offers the same to community satellite programs from the SCROC Torrance Center. Adults may also enroll in classes offered at the three previous time slots as well as in the 10 a.m. to 1 p.m. time period. Adults frequently enroll in the Saturday courses offered at SCROC.

SCROC keeps student attendance and performance records, and awards grades for courses completed. For high school students, these materials are forwarded to each student's home high school which grants credit for SCROC classes. High school students can earn up to fifteen credits per semester and ten credits for summer school. At least fifty percent of all students who complete SCROC programs go on to some form of postsecondary education.

Four ongoing programs, Hospital Occupations, Hotel/Motel Operations, Horticulture, and Retail Occupations have classes especially for special education students. High school counselors identify special education students whom they determine would benefit from vocational training and discuss SCROC classes with them. SCROC teachers then interview and screen prospective students for appropriateness to the training.

Once admitted, special education students are exposed to all course components and, as with all SCROC courses, progress at individual rates. After completing an introductory one-semester course, many of the special education students continue with the cooperative course with classroom training and paid employment, if offered in the program. Most of these students have secured local full-time employment in the appropriate occupational field.

In 1988, SCROC, in conjunction with two of the local area school districts, initiated a counseling program to serve at-risk students. Two high schools in the Centinela Valley district and Torrance High School are collaborating with SCROC in this effort.

At-risk students are defined by the districts as those students demonstrating high dropout potential. Their identification characteristics include 2.0 or lower grade point averages, difficulty in acquiring credits for graduation requirements, and between ten and twenty-five absences in one semester (depending upon the school district). Some of the students have limited English proficiency; others experience economic constraints or domestic problems. Almost all identified students display an obvious lack of self-esteem and of motivation.

The counseling program is provided by both SCROC counselors and by cooperating high school counselors or other student support personnel. Each student participates in individualized advisement sessions focusing on individual needs assessment, self and

career awareness, realistic goal setting, and job skill preparation opportunities on the home school campus or at SCROC.

The anticipated outcome of the counseling sessions is to enroll at-risk students in vocational education programs for acquisition of marketable job entry skills. In addition, SCROC and high school officials hope that, by prescribing such individualized programs, at-risk students will experience success in learning, understand the value of academic courses, and acquire graduation credits. The overall desired impact is to reduce high school dropout rates.

College-bound students also enroll in SCROC courses. Their numbers have declined in recent years given the increased high school graduation requirements mandated by state law in 1983. However, these students often take SCROC courses during the summer, on Saturdays, or in evenings during the school year.

SCROC programs of greatest appeal to college-bound students include the various classes in computer skills, graphic design, and technical and computer-aided drafting fields. Medical and dental assisting courses are popular with pre-med college-bound students. They learn medical terminology and techniques useful in college courses and in securing relevant part-time and summer jobs.

Based on industry needs, SCROC plans to increase technological training in the near future. The administrative staff anticipates that courses in laser and radar technologies, robotics, avionics, and aerospace would attract more college-bound students than currently enrolled.

SCROC teachers have strong reasons for encouraging college-bound students to attend SCROC. First, through SCROC classes, college-bound students have an opportunity to explore possible career fields and to decide whether they wish to pursue further study at the postsecondary level. Such exploration can stave off possibly disastrous career decisions. Second, college-bound students can acquire job skills to secure well-paying part-time or summer jobs to pay for college expenses. They will not be relegated to minimum-wage jobs. Third, depending upon the college or university, students may receive course credits or waivers because of SCROC courses they have taken. In this context, SCROC is beginning to work closely with nearby El Camino Community College to articulate SCROC courses in several fields with community college courses to ensure SCROC

students advanced placement. Both SCROC faculty and administrators share these points with high school counselors, academic course teachers, and administrators when recruiting students.

Mission and Curriculum

Everyone at or associated with SCROC can describe its mission. Although the words and phrases differ, all concur that SCROC provides relevant training to develop job competencies and salable skills for entry-level positions. Many students and teachers add that students also develop self-confidence, self-esteem, an understanding of the value of academic skills, success in and enjoyment of learning (frequently for the first time), and, often, a heretofore unknown interest in postsecondary education.

SCROC vocational education, training, and career preparation are available to both high school students and adults. South Bay adults interested in occupational training are eligible to attend the Center. High school students eligible for SCROC classes include residents in the boundaries of the six cooperating school districts currently enrolled in a public or private high school. These students attend their home high schools daily to ensure appropriate completion of required academic courses. In the junior or senior year (or sophomore year if a student has reached age 16), students may enroll in SCROC occupational classes for three hours a day for up to one year. Students work through home high school counselors to enroll at SCROC and to receive high school credits.

Most high schools credit SCROC classes as electives. However, SCROC administrators have worked closely with feeder high schools to validate the academic components of selected SCROC classes. As a result, some feeder high schools will permit limited substitution of SCROC classes for academic courses in math, science, art, computer literacy, and English.

In addition to high school credit and the grades awarded to students, SCROC provides all students with materials and services useful to obtaining employment. First, each student leaving SCROC receives a Performance Profile indicating all areas of training in his/her chosen field in which competency has been achieved. Second, SCROC students receive Certificates of Proficiency when they have reached the employability level in a specific job title. Third, SCROC has a Job Placement Office to assist both trainees and graduates to locate employment opportunities. SCROC instructors, course Advisory Committee

members (to be discussed later), and cooperating businesses also help with job location and placement.

The programs at SCROC help students see the relationship between academic and vocational subjects. Many high school students do better at their home schools as a result of the classes they take at SCROC. Faculty attempt to integrate academic and occupational learning. An office occupations teacher said, "It's intentional. In my classes I have students write a major report. They do research for the report as they would in industry. They begin to see a reason for report-writing because the project was related to their job training." She added,

> They also bring in their high school projects to work on. The class size is so high in the comprehensive high school that students receive little individual help there. They're here three hours a day. Our teachers get to know our students better and there is more individualization here.

The OJT component of several programs at SCROC also serves to combine academic and occupational education. Students in the retail program who work at Penney's or Marshall's are called upon to write, calculate, and communicate effectively in addition to using their knowledge about retail sales.

There is no ability grouping of students at SCROC. Students are placed in classes they request and teachers receive no information about the students' test scores, report card grades, or attendance patterns. The only exception is special education students, whose records are used by SCROC administrators and faculty in planning the students' individual programs. There is an advantage in having no prior knowledge about the student to bias the instructor, but there is a disadvantage in not knowing more about the student's academic progress (or problems). There is virtually no communication between instructors at SCROC and instructors at the home high schools. However, there are tutors on the SCROC campus who communicate special needs of students back to the home school.

The curriculum is occupationally centered, with a hands-on emphasis to produce salable skills. There is an equally strong focus on individual student pacing, allowing each student to progress at his/her rate in acquiring job competencies. Courses are offered on an open entry-open exit basis to facilitate individual learning.

The hands-on focus of instruction is readily apparent in SCROC courses. Classrooms incorporate a variety of teaching and learning techniques, often

simultaneously. Individual students intently undertake their assignments. Other students work in small groups of two or three to complete projects. Groups of six or seven role play to simulate "real world" job situations.

Students are free to help each other. Depending upon the program, peer tutoring is formally or informally built into the classes. Most students engage in and enjoy this cooperative element of the classroom setting. A number of teachers said that the mix of adults and high school students in their classes is "invaluable." They help each other and "act like a family." While formal lecture-discussion periods are included, most teachers keep this format well-focused and to a minimum.

SCROC course offerings are "industry sensitive." That is, the Center takes great care through several mechanisms to ensure that the training provided is current, needed, and in demand by local employers.

First, each program has an advisory group composed of employees of local businesses and industries. The groups meet at regular intervals throughout the year to discuss changes in occupational fields and in required job skills, to review course content, and to provide information about employment opportunities.

Second, SCROC annually conducts formal surveys in industries and businesses to obtain data for current and future programs. Those surveyed include Chief Executive Officers (CEOs) of major companies in the area, Chambers of Commerce in the fourteen-city SCROC service area, and advisory group members.

Third, SCROC subscribes to a national job and market data service. The Center receives current and future demographic data useful in verifying the relevance of ongoing programs and in planning for future offerings.

Fourth, teachers are expected, encouraged, and supported by the administration to stay current and aware of changes in their fields. In the three-hour breaks between scheduled classes, faculty can and do confer with occupational peers and colleagues about evolving needs and changes in that field. They meet with local employers to develop satellite programs and OJT locales. Teachers also ascertain the job market for SCROC trainees and graduates. They discuss the skills and competencies sought by the employer. The information gathered is shared with SCROC administrators for use in the constant assessment of SCROC course relevance.

Fifth, at the weekly "Cabinet Meetings," the Superintendent and the administrative staff review data from various sources. Assigned staff consolidate the information into position papers. Occasionally, outside consultants are hired to assess current programs, verifying or augmenting occupational data compiled from other sources. The Superintendent presents the findings from consultants and staff reports to the SCROC Board of Trustees for direction.

Sixth, SCROC is highly visible and active in the community. They have effective outreach techniques and an intensive community liaison effort. Through formal and informal means, SCROC faculty and administrators "keep an ear to the ground" and stay alert to business and industry growth, change, and needs.

SCROC administrators translate the data and information obtained into action. New programs are added; out-of-date programs are dropped. Over the past five years, six programs have been eliminated. During the same period, the Adult Program has been built, the high school training site component added, and ten new training programs offered.

New programs must prove themselves. SCROC does not automatically include such efforts as part of the ongoing program. The Center uses waiting lists based on student requests for newly proposed courses. Student interest is one of the key factors in determining the worth and retention of such courses. Other factors include employer needs and job placement opportunities.

To facilitate looking at SCROC, the administrative staff was asked to select three programs they considered exemplary. They chose Hotel/Motel Operations, Banking Equipment/Teller Procedures, and Medical Assisting. Their selection criteria are as follows:

1. The programs are of longstanding at SCROC. Each has operated for a minimum of ten years and built a credible track record of training.

2. The hands-on training blends basic and new occupational competencies. Training is based on expressed needs of the area's employers.

3. These programs have excellent job placement records. Graduates secure full-time employment readily, frequently having been sought out by employers. Trainees are often hired part-time and then move into full-time positions with the same employer upon program completion.

4. The programs are frequently in great demand by students. Waiting lists for enrollment often result.

5. The teaching staff are highly skilled and motivated professionals who enjoy their occupational fields, teaching, and working with students. Actively involved in the educational and business-industry communities, they have excellent employer contacts. They are innovative, taking the initiative to modify, replace, or extend the program per workplace demands and changes in the occupational area.

- *Banking*

The banking program has very strong ties with the banking industry. The teachers had responsible bank jobs before coming to SCROC to teach. Their contacts in the industry provide OJT sites for every student in the program. At the end of each school year, representatives from every bank in the area come to SCROC to participate in the Annual Job Fair, where they interview students for banking positions. Former students of the banking program who achieve success at their banks often recruit employees from the SCROC classes. Many former students come back to SCROC to give guest lectures to the banking classes, including a graduate of the first class who is now the Operations Officer at Barclay's Bank. Many banking program graduates move up quickly once they are hired in an entry-level position.

Students in the banking program spend half their time in the SCROC classroom and the other half in on-the-job training at a bank. The classroom has tellers' windows and loan desks and other work areas found in banking. Learning activities include real-life bank situations in which students role-play as customers waiting in line, tellers, new accounts persons, and loan clerks. Students also learn various accounting skills. The placement success rate in the program is one-hundred percent. In fact, the instructor usually does not have enough students to place in the jobs available through her banking contacts. Students with SCROC certificates are sought out by employers and make up to $1,000 more per month than employees without the certificate.

- *Medical Assisting*

Administrators at SCROC believe that all of their medical courses should count as science courses. One said, "Our courses are superior to any basic high school science course." SCROC courses include microbiology, cells and tissues,

pharmacology, and some physiology. At the present time, however, only the Emergency Medical Technician (EMT) course is approved for science credit.

The instructors in the medical program, which is in its twenty-first year, train students to become medical assistants, receptionists, insurance billers, and secretaries to doctors. The two instructors worked in the medical field before coming to SCROC. They see SCROC as "not just a vocational training school." They agree that their students need to think of themselves as professionals and to regard the entry-level jobs they get as stepping stones to something else. "This is the beginning of their training and education. We encourage them to take college courses," said one of the instructors. Some students who complete the program go onto become nurses, EKG technicians, office managers, and X-ray technicians. The instructors do a once-a-year follow-up on graduates of the program.

Several students were referred to the medical program at SCROC by potential employers. Others enrolled in the program as an alternative to more expensive private programs. Private schools offer the same courses for $5000. Adults at SCROC pay $90. A number of students said that the program at SCROC is far superior to those costlier programs because the teachers are better prepared, the course is more thorough, it has a lot of practical work, and they cover more content. Another factor that influenced several students to enroll at SCROC is the child care facility that costs 50¢ per day and is housed in the building.

- *Hotel/Motel Operations*

The Hotel/Motel program at SCROC is unique. Two teachers are based at the Torrance Holiday Inn where classes and on-the-job training are provided to students. This program was developed jointly in 1979 by the Holiday Inn and SCROC and has successfully trained over six hundred high school students and adults for employment in the hotel/motel industry.

The program succeeds because students learn in a realistic setting and interact with hotel employees and guests. Students wear uniforms, clock in, and follow other rules that motel employees follow. The teachers stress the fact that students not only learn job skills, but also learn life skills such as punctuality, getting along with others, problem solving, and independence. Currently there are five classes at the

Holiday Inn and at the Sheraton in Redondo Beach. One of the classes is for special education students, and there is always a waiting list for that class.

The program prepares students for jobs as switchboard operators, server assistants, host/cashiers, laundry workers, cooks, room attendants, stewards, and banquet servers. "You must start at the bottom in order to move up in this business," explained one of the two instructors. She added, "The college courses in hotel/motel management are too theoretical." The SCROC program is individualized for each student and is designed to allow students to experience success, some for the first time.

Student and hotel employees work well together. One of the teachers said, "Adults here are wonderful role models for the students, and sometimes the opposite is true." "Employees become more careful about their performance," she explained, "because students are modelling their behavior and watching everything they do." For example, an employee in the pantry of the hotel restaurant feels very special since she began to be involved in the program. When students learn what she knows she is delighted and she feels her work is appreciated by them. Students' interest in employees doing behind-the-scenes jobs makes those employees feel important and valued. "The new faces and new excitement of the students each semester re-excites our employees," explained the hotel's Director of Sales and Marketing.

The employees are not the only ones pleased with the program. The guests are also impressed, and many write letters to the general office or to the hotel's manager commending the Holiday Inn for what it is doing. Others stop by the manager's office and ask for information about the program to take back to their cities.

When asked if the special education students presented any problems for the hotel, the Director of Sales and Marketing said that the public and the employees have responded very positively to them. In fact, she said, having disabled students in the hotel working in the restaurant at lunchtime has actually helped her wrap up a sales contract or two. She said, "This is the easiest type of program for a hotel to enter into. Retail stores could do it, too." She added that people at the school "took away the fears and concerns over having students on site." Teachers assume responsibility for students being in uniforms, arriving on time, being well-groomed,

following hotel rules, and having a positive attitude toward work. Many of the students in the program get jobs at the hotel even before they complete the course.

A student in the program said, "You learn about working in this program. After awhile, you're actually running the place." Another student, who is planning to attend chef's school after he graduates, said, "The kids in my high school wish they were in this program." He added that having adults in the class was "neat." "It gives more depth to the class, and we all help each other," he explained.

Staffing

The entire SCROC staff totals one-hundred and sixty-eight including certificated staff (teachers and administrators) and classified staff (paraprofessionals, office/clerical, other support positions). Of this total, seventy-eight people or 46.4% are full-time employees. This group includes forty-three certificated staff and thirty-five classified personnel. In the ethnic-racial composition of the total staff, one-hundred and twenty-two people are Caucasian (72.6%); twenty-four are Blacks (14.3%); fourteen are Hispanics (8.3%); and eight staff members are either Asian, Filipino, or Pacific Islander (4.8%). The male-female split is ninety-two males (54.8%) and seventy-six females (45.2%).

SCROC has a teaching staff of one-hundred and twenty-one. This includes forty-three certified staff and seventy-eight part-time instructors of which thirty-three teach SCROC courses on home high school campuses. The home campus teachers are paid by SCROC and report to SCROC's Administrator for Campus and Community Programs. They also function as part of the home campus faculty and are housed there.

The SCROC part-time instructors teach one course, primarily in the Adult Program at the Center. The full-time SCROC faculty at the Center teach classes with both high school and adult students. They are paid for a seven and three-quarter hour teaching assignment and are assigned two classes. Their work day amounts to eight and three-quarter hours with an hour and three-quarter block midday for industry visits.

Almost all the part-time and full-time teachers indicate that they willingly spend personal time with their students and on their courses. Their compensation is to see students grow, discover the joy in learning, acquire job skills, and obtain jobs. A teacher explained it in this way: "They're dedicated and love what they're doing. You can see it in their faces and hear it in their voices."

The faculty commends and appreciates the superintendent's leadership which involves teachers in decision making and in the responsibility for making SCROC a useful and successful component of the area's educational system. "Progress through teamwork is SCROC's theme," explained the superintendent. A teacher said that the administration always has "open doors." He continued, "We're treated as equals. I have great satisfaction from working here."

Despite long hours and opportunities to make considerably higher salaries in industry, SCROC teacher turnover is low. Teachers cite professional respect on the job and a strong sense of making significant contributions to education as powerful motivators to stay at SCROC. A teacher explained, "In business, I could make twice as much, but you want to give others a head start you didn't get." Another teacher said, "It's not all about dollars. Instructors here could make more money in business, but we're satisfied. We all care, and we want to be here."

About one-half of the SCROC teachers have undergraduate college degrees. As allowable under state law, the noncollege graduates have been certificated for vocational education based on work experience. SCROC encourages and supports continued professional growth and learning for the teaching staff. Numerous inservice training sessions on various teaching-learning techniques and topics are sponsored on campus. Teachers receive financial support to attend in-state professional meetings and training sessions. Faculty are encouraged to keep current in their occupational fields and to use their breaks between classes to pursue these activities.

The streamlined SCROC administrative staff numbers six. The staff is balanced between long-time certificated staff promoted from within and experienced "outside" vocational educators who joined the staff over the past four to six years.

SCROC administration is characterized by stability, concern, and involvement. Stability emanates in part from the fact that SCROC has had only four superintendents in twenty-two years. Teachers attribute the other administrative characteristics to the predominantly female administrative staff. The superintendent does not shirk her leadership responsibilities but also does not hesitate to share information and decision making with other certificated staff. Teachers and administrators have professional autonomy within mutually agreed upon parameters. The teamwork and the concern for professional and personal

growth of staff and students displayed by the superintendent and her administrative staff has a ripple effect throughout the Center to the local educational community into cooperating businesses and industries.

The professionalism, collegiality, and cooperation observable in classrooms permeate the entire Center. These characteristics are apparent among teachers and administrators and between the two groups. Teaching staff are experienced practitioners of their subject areas who stay current in their fields. Faculty members often collaborate to improve course offerings or teaching techniques and to create and enhance community awareness and support of SCROC through special events or projects.

A SCROC board member explained, "One thing really unique here is the feeling of a team—everyone really likes everyone else . . . They're all part of a team working together. I see it here more than at any of my schools." Another board member agreed and added that the superintendent ". . . is the reason. She is so sincere and so caring. She makes everybody feel like gold."

The positive, strong working relationship between the faculty and administration is the result of several factors. First, several SCROC administrative staff began at the Center as teachers and have moved into administration. Second, these same individuals have been with SCROC from ten to eighteen years apiece. Such longevity indicates loyalty and commitment to the Center, a point not lost on faculty and students. In addition, these administrators have a valuable institutional memory allowing them an excellent vantage point for the future of SCROC.

Third, SCROC has a relatively stable history of superintendents. Only four individuals in the Center's twenty-two year history have served in this position. The current superintendent began as a SCROC teacher sixteen years ago, moved into administration ten years later, and into the superintendency three years ago.

Fourth, the current superintendent strongly believes in and implements participatory management. Faculty are surveyed annually about their perceptions of and suggestions for SCROC in general, about recommendations for their courses and programs, and about problems or complaints. Center teachers and staff are not members of unions. Instead, faculty and staff members elect representatives to meet with the superintendent to discuss their needs and concerns. The representatives report back to the teaching staff. The

superintendent frequently incorporates the staff's wishes into SCROC's yearly and long term priorities and plans of operation.

SCROC's administrative staff meets on a weekly basis to track Center progress and direction. Ad hoc meetings are convened as necessary for special need issues. Retreats are scheduled yearly for brainstorming and planning.

In this environment, both faculty and administrative staff contribute to the annual operating plan; understand their roles; and have flexibility to operate freely, to initiate projects, and to undertake appropriate actions to serve students, programs, and the SCROC. Teachers and administrative staff repeatedly state their delight in being treated as knowledgeable professionals and being consulted on and participating in the development and implementation of overall SCROC priorities and plans.

Such faculty satisfaction is a cohesive element in the administration of the Center and in the delivery of SCROC programs. SCROC administrators are proud that the faculty and staff have not unionized. Not only have SCROC teachers voted down a union proposal, they have even refused subsequently to allow union organizer presentations at SCROC. These actions are noteworthy in their own right in the recent decades of teacher unionization. They are even more remarkable in a state with a strong, influential teachers' union and, especially noteworthy considering the Los Angeles area has one of the largest, most powerful local teachers' unions nationwide.

Linkages

SCROC administrative staff recognizes its role in creating a positive response to vocational education by the local educational establishment, local employers, and the general community. SCROC administrators maintain a high profile in local educational professional associations, task forces, and work groups as well as in joint industry-education councils and commissions. The Center is integrally involved with both the educational community and the business and industry community in the South Bay. The Center uses two major approaches to secure involvement—input and outreach.

Input to SCROC is achieved by bringing individuals and groups of business, industry, and community representatives to SCROC. The program advisory groups are composed of business and industry representatives and are a strong element of community involvement. The six-member SCROC Board of Trustees, composed of school board

members from the six participating districts, is a prime example of community representation.

SCROC board members rotate in a staggered configuration every two years so that all of the board members from all of the districts will eventually become involved with SCROC. One SCROC program is highlighted at each monthly Board meeting. A teacher is invited to describe his or her program. Most show equipment, videotapes, slides, posters, or student work. They also bring several students to the meetings. These presentations have been extremely effective in increasing board members' awareness of SCROC programs and in creating very positive attitudes toward the teachers and students at SCROC. For example, one board member took sample billboards designed by SCROC advertising students to her district's board meeting and invited all of the other districts' board members to vote for the best ones. "You cannot believe the quality of the work," she said.

SCROC's marketing director, a new position created in 1988, also contributes to SCROC input. Tours for local business people and for high school students are sponsored at the SCROC Center. Visitors observe the facilities and classes and learn about SCROC programs. Special events, including Center tours, are held at SCROC for high school principals, their staffs, and board members. These events are used to express appreciation to people already working with SCROC and to create awareness in those unfamiliar with the Center.

The marketing director is also responsible for numerous SCROC outreach efforts. The director has recruiters working with her whom she assigns to specific high schools. The recruiters are responsible for developing and nurturing positive and productive relationships with feeder high school administrators and teachers. Other activities include job fairs; school board, classroom, and assembly presentations; speaking engagements with civic organizations; specialized conferences; distribution of SCROC program materials at local public libraries; and the development of SCROC videotapes.

The SCROC staff is currently working on articulation with the community college. Students who take SCROC courses would be eligible for more advanced courses at the college level. Some SCROC courses could also count for college credit. Teachers at SCROC feel an articulation agreement would prevent overlap and redundancy for students who continue their studies in a given occupational area.

Teacher and administrator professional outreach efforts on the local level with colleagues, the educational community, and business and industry leaders have been previously discussed. SCROC is also active on the state and national levels. The Center has memberships in statewide and national associations for school board members, for school administrators, and for vocational education schools.

Administrators and faculty, by careful design, are astutely politically attuned and well-connected to their constituencies. A principal at one of the feeder high schools said SCROC has done an outstanding job in the political arena. "They meet everyone's needs without stepping on toes. They've worked hard with movers and shakers in the industry and with leaders in the schools," she explained. One of the best things SCROC has done, in her opinion, was to make sure that board members of the feeder districts serve on the SCROC Board. A SCROC administrator stated, "We have made ourselves part of everything educational in South Bay. We keep ourselves connected with established groups."

SCROC also voluntarily provides professional services to the educational establishment. Two recent examples illustrate this point. SCROC faculty reformulated the clerical examination for new employees of a local school district. Similar assistance was provided for the state's credentialing program for business teachers.

Several South Bay industries and businesses have requested special employee training by SCROC. The Center provided staff training for Magnavox, new employee training for the Holiday Inn, and fireman training for Hughes Aircraft. Although SCROC charges its regular adult student fees for such training and adds the hours to the ADA apportionment formula, administrators are studying such industry training as an additional outreach activity and a possible revenue source.

SCROC staff are particularly proud that the nearby Holiday Inn, long a training site for Hotel/Motel Operations, "adopted" the entire Center in 1988. This action intensifies the relationship established in 1979 with the advent of the operations course at the hotel. By adopting the Center, the hotel serves as the site for SCROC conferences, provides reduced room rates for guests visiting the school, reduced catering costs, and offers additional OJT opportunities for SCROC hotel/motel students when working at SCROC events. However, the adoption really constitutes Holiday Inn's tribute to the vital role SCROC plays in the South Bay community.

Issues

"People have the idea that we all have grease under our nails and are wearing bib overalls," explained one administrator when asked about the image of SCROC. A board member said that people in the community think of vocational schools as a place to get rid of troublemakers. "They don't think that way at SCROC, but outside, the image is negative," he added. He feels that free courses should be offered to school personnel so they can find out for themselves about the quality of SCROC programs. His wife took a typing course at SCROC in order to get a certificate. As a result, she was hired for a library job over sixty other people who applied for it.

A teacher insists that education must "up the image" of vocational education and make it a recognized part of the educational plan. He said, "It needs to come from the top down. The Governor needs to recognize it in the budget." A bill passed recently in the state legislature recommending that every student take vocational classes, but no funding accompanied the bill. Consequently, no change has taken place.

The superintendent of Palos Verdes, an affluent feeder district to SCROC, said that he surveyed the community and six hundred of the 1400 parents returned the survey. When asked the question, "Do you believe college-bound students should have vocational education?", seventy-one percent said "*yes*." These parents, however, do not enroll their children in SCROC classes in large numbers. The superintendent thinks it is because they feel vocational education is "for other people's kids." He noted that educators are also guilty of thinking this way. He encouraged his daughter to take four years of woodshop, which he believes has helped her in her current profession as an interior designer. He also suggested changing the name of vocational education to "contemporary technology." He concluded, "A great selling job has to be done; something has to be done with the image. The Armed Services launched an ad campaign that turned attitudes around. Why can't we do the same?"

Purpose

Virtually everyone interviewed at SCROC agreed that vocational education must be made available to all students, including the college-bound. The purpose is too narrow if it includes only entry-level skills for students who are not continuing education after high school. A strong argument was made for college-bound students to attend SCROC as a way to learn skills for working their way through college. Instead of working at a

minimum wage part-time job, these students can earn $8 or $9 per hour with a SCROC certificate in a number of areas such as drafting, computers, interior design, electronics, advertising, graphic design, and banking. "Why not use vocational education to learn a second career and finance an education?" asked one administrator.

A teacher insisted, "In this technological society, there is no place for people who can't change a washer. Whether they go to college or not, everyone needs occupational skills to become a well-rounded, productive citizen." Another teacher said, "More students should be given this opportunity. Even kids going to college should have a skill to help them through school!" In 1971, ninety-eight percent of SCROC students went on to college. In the mid-1970s, there was a change, and vocational education was no longer seen as attractive. Faculty feel a mandate that all students take a vocational program is needed. Everyone needs a salable skill, they insist.

A teacher recommends SCROC to people who are halfway through college as a way to see what a field is like before committing to another two years in a major. Another teacher agrees, "I wouldn't have studied speech pathology if I had taken vocational education. I would like to see a marriage between vocational and academic education."

An administrator follows up by saying, "We cannot any longer segregate academic and vocational education. Kids from affluent suburban areas have a right to alternative education, too. Congress has to publish the need for vocational education in today's workforce." Another administrator added that vocational courses should be made more available to adults, immigrants, and dropouts. She emphasized that "federal monies should not go to private businesses and agencies for vocational training. Fly-by-night firms get government contracts when SCROC or a community college could do the job better." She added that "people often come here after paying for a program that didn't train them properly." There is a perception that private programs are better than public education. "It can't be very good because it's publicly supported," is how she described a prevailing public attitude.

SCROC staff is planning to develop flyers that encourage students to enroll in Center programs. The flyers will feature college-bound students who are enrolled in SCROC courses. The efforts currently underway to build a 2+2 program with the community college will help, they feel, to attract more students to the program. One of the board members would like to see vocational programs in the middle schools to expose students to vocational education at an earlier age.

Enrollment and Financing

As mentioned earlier, SCROC student attendance hours generate the major portion of the Center's operating revenues per the state formula for ROC/Ps. Therefore, student enrollment is a major concern for SCROC teachers and administrators. In fact, most interviewees cited as one of the Center's biggest challenges the finding of enough students.

From a high of 4,800 adult and high school students in 1980-81, SCROC enrollees now total 4,077. This decrease in enrollment results from the following three circumstances: (1) the 1978 passage of Proposition 13 which restricted local property taxes thereby limiting revenues for public K-12 schools; (2) declining enrollment in feeder high schools; and (3) increased state high school graduation requirements.

First, school revenue limitations resulting from Proposition 13 began the decline of high school student enrollment at SCROC. Faced with increased financial constraints, school district boards and administrators had to make hard choices. Academic classes were emphasized over vocational education; transportation costs to attend SCROC were curtailed. As a result, fewer high school students began to attend the Center.

Second, although the overall population of the SCROC service area has increased steadily since 1977, affordable housing for families with children is declining in the area. The average single-family home price of over $100,000 has caused many families to locate in outlying communities with affordable homes. As a result, feeder high schools have experienced declining enrollments. Since 1982, three area high schools have closed, further shrinking the pool of potential SCROC students.

Third, in 1983, the California State Legislature enacted massive school reform legislation. A major provision increased academic subject requirements for high school graduation. Although the Center worked closely with local school districts to obtain academic credit for selected SCROC courses, success was limited. Most school districts still award only elective credit for SCROC classes. Students pressed to meet academic requirements often have little time available to enroll in elective courses such as those at SCROC.

These factors have had a demonstrated impact on SCROC enrollment. Over the past ten years, SCROC staff have been working hard to maintain the current four thousand student enrollment level at least, and preferably to increase it. To these ends, Center personnel have initiated efforts to recruit students and to generate needed revenues. Plans to

attract college-bound students have been previously described. Two other activities, an expanded Adult Program and a new program for at-risk high school students, present SCROC with additional issues to address.

To generate needed revenues given reduced high school enrollments, SCROC expanded its Adult Program to maintain ADA hours and to obtain additional funds from course fees paid by adults and the increased high school campus classes.

Yet, the ethnic and racial composition of this increased adult enrollment closely parallels the overall demographic changes in the South Bay. Since 1982, the Asian and Hispanic populations have grown with the general population increase. Many are newly-arrived immigrants and refugees seeking ways to learn English and to obtain relevant work skills. SCROC has experienced an approximate seven percent increase in adult enrollments of Asians and Hispanics between 1982 and 1989. The resulting language and cultural differences have created challenges in written and oral communication for Center personnel to address classes more fully than they have to date. This situation is mirrored in the existing group of SCROC high school enrollees.

First, too heavy an emphasis on at-risk students may inadvertently undermine SCROC's conscientious efforts to create a new, positive image of vocational education. Results of these efforts are now taking hold among educators and the general community in the SCROC service area. Second, SCROC may be contributing to or appearing to contribute to a track system for academic low-achievers in high schools, thereby accidentally leading to an imbalance in the actual and desired SCROC student body of high and low achievers.

Enrollment levels affect both class size and class sessions offered. Class size at SCROC is a function of both educational philosophy and fiscal reality. SCROC maintains the classroom dynamics described earlier by capping enrollment. Waiting lists are developed for courses eliciting more than twenty-five applicants. Several courses in fields such as computer training, medical assisting, and hotel/motel operations fall into this category. Classes with fewer than eighteen applicants are cancelled or postponed until sufficient enrollment warrants offering the class.

Given the state formula for ROC/P funding, SCROC administrators recognize that eighteen students generate the necessary revenues to support a class. Yet, the SCROC

class size of eighteen to twenty-five exceeds the preferred vocational education standard of twelve to eighteen students per class. SCROC's current class size may leave the Center open to criticism by other vocational educators with possible concurrence by SCROC teachers. However, both Center teachers and administrators are keenly aware of the ever-present challenge between providing worthwhile educational programs and securing adequate financial resources. SCROC's professional personnel have avoided the financial hazards and have skillfully achieved the required balance.

In light of financial constraints, SCROC may have to consider other revenue-generating methods. One source may be flat fees higher than the existing adult fee schedule for training industry employees. Another approach, suggested by a student, may be to charge high school students a minimal fee for SCROC classes to enhance their appreciation of the value of SCROC training. The additional revenues generated from these sources could pay for equipment repair and purchases and for program expansion.

Conclusion

SCROC embodies a different model for offering occupational education from that of the comprehensive or vocational high school. The ROC/P model has both general drawbacks and strengths to note. SCROC's specific challenges are discussed in the Issues section. Its specific strengths are summarized here.

Among drawbacks, the segregated nature of the center model continues to reinforce the division between academic and vocational studies. Integrating the two becomes much more difficult than in settings where both types of courses are physically contained on the same school site and are, literally and figuratively, juxtaposed.

In other respects, the structure of this model better serves students than comprehensive or vocational high schools. ROC/Ps have better, more up-to-date equipment than most high schools can afford. The three-hour daily class format for one or two semesters allows ROC/P teachers to get to know their students better and to work with them more intensely than high school teachers with a fifty-minute class format. Center class size, limited to eighteen to twenty-five students and usually smaller than academic high school classes, facilitates teacher-student and student-student interactions.

Specifically, SCROC has carved out a valuable niche in the South Bay to provide vocational training and career preparation based on local business and industry needs.

Training focuses on currently required job skills leading to immediate placement in full-time employment for SCROC graduates. Even trainees frequently find part-time jobs in their occupational fields while completing their SCROC courses.

Much of SCROC's success with students results from specific characteristics embodied in the Center's educational philosophy and implemented in the classroom. Class sizes remain steady. The three-hour daily class format allows for concentrated teaching and learning. Teachers are committed to student learning and to SCROC. Various teaching techniques emphasizing hands-on learning allow students to progress at individual rates. Students know that instructors care about them and willingly provide individual student attention. Teachers have high expectations for student behavior and performance and provide sufficient autonomy and guidance to ensure student success in learning. Classes provide a contextual framework for the job competencies taught and for the relevant academic skills needed. Underlying the classroom scenarios are the support and leadership of a dedicated, caring superintendent and administrative staff. Many SCROC staff, observing student gains in one or two semesters, advocate a two-year course sequence in Center programs.

Exciting things are happening in SCROC classrooms. Students are experiencing success in and enjoyment of learning, some for the first time. Teachers acclaim their good fortune to work at SCROC. Business and industry leaders actively participate with the Center. Much of the general community knows about or uses SCROC.

Similar characteristics and results have been documented in the research literature about effective schooling techniques for at-risk, disadvantaged, inner-city students. SCROC demonstrates that not only this group of students but those from widely varying backgrounds, all of whom comprise the Center's student body, benefit from learning environments made contextually relevant, having high expectations for students, and allowing individual student progress. Many of SCROC's procedures and practices have transferable applicability for both other vocational education programs and academic high schools. A SCROC administrator said, "I'd like to see more legislators visit the Center and have them see what vocational education is really like. We criticize and ridicule our representatives, but we owe it to them to show them what we are doing."

THE COSTS OF OPERATING EXEMPLARY URBAN, CAREER-ORIENTED SECONDARY PROGRAMS

Jay Chambers
Center for Education Financing and Planning
American Institutes for Research
Palo Alto, California

Introduction

The purpose of this section is to explore the economics of operating exemplary programs in urban high schools with a career or vocational orientation. There are two primary questions to be addressed:

1. Are these exemplary career or vocationally oriented urban high school programs more costly to operate?
2. What factors underlie any observed variations in the cost of operating exemplary high school programs?

Are these schools any more costly to administer? Do they require additional support services to function? Are there any differences in the class sizes and teacher staffing patterns that result in higher instructional costs? Are there any differences in the salaries paid to the teachers employed in these schools? Do these high school programs require any additional investment in specialized furnishings and equipment?

This report will break down the total costs of education according to the various services delivered to students attending different types of urban high schools. The first section below describes the data collection from the urban high schools in three geographic locations across the United States and lays out a conceptual framework and the procedures for the subsequent analysis. The next section presents some data on the costs of providing services in a regular high school program.

Using the framework set out for the costs of a regular high school student, the remainder of the report examines each of the major elements that is likely to have an impact on the overall costs of serving students in vocational-technical high schools relative to academic-comprehensive high schools. The topics include student course loads, average class sizes and the composition of student course loads, differences in teachers' salaries, the costs of nonpersonnel resources (including supplies and materials, textbooks, and

specialized furnishings and equipment), site administration and support services, and construction costs. The results of the analysis are brought together in the last section which presents the summary and conclusions.

Methodology: Data Collection and Analysis

Data on expenditures, staffing, and students was gathered on the exemplary high schools in Chicago and New York City, and the Southern California Regional Occupation Center (SCROC). Since one of the purposes of this study was to compare these exemplary high schools with other high schools, it was necessary to select some additional schools to include in the analysis which could be compared with the sample schools. With the limitations of time and budget, it was not possible to select a random sample of other schools that would be representative. The purpose was simply to establish some sort of benchmarks for the results of our cost analysis of the exemplary high schools.

One comparison school was selected for each of the exemplary high schools visited for the case studies in Chicago and New York (i.e., two in Chicago and six in New York City). Dr. Maxey Bacchus, the Director of Operations Analysis and Planning in the Chicago City Public Schools, was asked to select the comparison schools in Chicago. Dr. Vernay Mitchell, who conducted most of the case studies for this project and is familiar with the high schools in New York City through other studies done in the school system, was asked to select the comparison schools in New York. The comparison schools were supposed to be regular academic-comprehensive high schools of about the same size as the case study schools. It was necessary to rely on the judgment and knowledge of the individuals most familiar with these two school systems to select the schools. The fact that the comparison high schools in each case were selected from among high schools within the same local school system already holds a great deal constant between the two schools.

Table 1 lists each pair of schools consisting of one exemplary and one comparison high school along with the data on enrollment and the type of high school. The schools are grouped in pairs to designate which comparison high school was intended to match up with which case study school. The case study schools generally accept students from an attendance area extending well beyond the local neighborhood.

TABLE 1

GENERAL CHARACTERISTICS OF THE CASE STUDY AND COMPARISON SCHOOLS

School (1)	Enrollment (2)	Type[a] (3)	Included in Case Studies (4)
NEW YORK HIGH SCHOOLS			
COMPARISON GROUP 1			
BROOKLYN TECHNICAL	4,485	A/C,SHS	Yes
JAMES MADISON	2,774	A/C,OAP	No
COMPARISON GROUP 2			
AVIATION	1,993	V/T	Yes
BAYSIDE	2,463	A/C,OAP	No
COMPARISON GROUP 3			
FASHION INDUSTRIES	1,982	V/T	Yes
JULIA RICHMAN	3,191	A/C	No
COMPARISON GROUP 4			
MANHATTAN CTR	1,268	A/C,APP	Yes
A. PHILIP RANDOLPH	1,436	A/C,APP	No
COMPARISON GROUP 5			
MURRY BERGTRAUM	2,622	A/C,OPT	Yes
SEWARD PARK	3,568	A/C,	No
COMPARISON GROUP 6			
JANE ADDAMS	1,635	V/T,	Yes
MORRIS	1,821	A/C,	No
CHICAGO HIGH SCHOOLS			
COMPARISON GROUP 1			
GEORGE WESTINGHOUSE	1,708	V/T,APP	Yes
KELVYN PARK	1,663	A/C	No
COMPARISON GROUP 2			
CHICAGO HS-AGRI SCI	462	V/T,APP	Yes
HS FOR METRO STUDIES	374	A/C	No

Source: *Comparative Analysis of the Organization of High Schools*, New York City Board of Education, The High School Division, 1987-88, pp. i-ii & 2.

[a] The codes are defined as follows: SHS=Specialized High School in Science-students apply and entry requires entrance examine or performance test; A/C=Academic/Comprehensive High School; V/T=Vocational/Technical High School; OPT=Education Options program-three year courses preparing students for career areas as well as for college; APP=Students apply to this school from the entire city; OAP=Optional Assignment Program-students living in certain areas may be assigned to these schools to reduce overcrowding, promote integration, or provide wider choice to students.

Data collection was conducted through contacts in the central offices of the two school systems and the principals at the school sites. Site budgets and/or staffing configurations were requested and received from central office officials in each district. Data on course schedules and corresponding enrollments, teacher workloads, sample student programs, and sample inventories of furnishings and equipment were requested from the principals in each of the exemplary high schools. Once again, limitations of time and budget prevented us from gathering this detailed site level information for the comparison schools. However, sufficient data was gathered from central office sources for the comparison schools to conduct the planned analyses. Moreover, some data was available systemwide for certain comparisons of costs and services between students attending exemplary and other high schools. Finally, in the process of requesting the site level data, the exemplary high school principals were also asked about other general issues related to the costs and revenues. Site level data requested from the exemplary high school principals was received from all but one of the schools.

Similar data was also requested from officials of SCROC; however, no comparison school was selected for SCROC. This was because (1) the school focuses on career or vocational training and does not offer the standard academic courses, and (2) a mixture of adult and high school students are served. The high school students attend their regular high schools for their academic subjects and are transported to the SCROC for vocational training. They spend the first three hours in their regular high school and the remainder of the day at SCROC.

The data collected from these districts and schools was organized into a series of service delivery systems. The structure for organizing this data is derived from the AEFP/RCM system which is designed for educational cost analysis. The AEFP/RCM defines service delivery systems as a list of resource requirements ("ingredients") for providing certain instructional, administrative, and support services in relation to the size of each service unit. The delivery systems themselves are defined in such a way as to facilitate comparisons of services across agencies or sites. This methodology makes use of, but generally does not rely entirely upon, data gathered from the business office of the school district. Examples of service delivery systems would include an elementary self-contained classroom, a high school course, and the general administrative offices of a high school.

Over the last few years, the AEFP/RCM approach has been utilized to estimate the cost of standardized as well as actual levels of educational services in local agencies and sites across the United States. Studies have covered a broad range of educational programs (i.e., regular elementary, regular secondary, special education, limited English proficient, vocational education, and compensatory education) for students served in at least selected local districts in Alaska, California, Connecticut, Illinois, and Washington.[1] As part of an effort to enhance the AEFP/RCM computer simulation software, Drs. Chambers and Parrish, who represent the principal research staff of AEFP, have developed the AEFP/RCM Prototype Database. This database represents a composite of the data collected from the many states and local districts covered by studies of educational costs conducted by AEFP staff.

The principal component of the AEFP/RCM prototype is a set of approximately four hundred educational service delivery systems. While this extensive set of delivery systems does not reflect a representative sample of local educational agencies, it does contain a great deal of valuable information on the relative costs of various programs that seems to reflect consistent patterns of variation across the range of agencies that the AEFP staff has been able to include in its studies. Information derived from the AEFP/RCM Prototype Database will be used as part of this analysis in the process of comparing the costs of regular high school programs with those of exemplary high schools oriented toward career and vocational education.

Standard Student Programs

Table 2, which presents two alternative standard student programs, is a starting point for this analysis. This table presents the list of service delivery systems generated by the needs of two students: one lower division (i.e., freshman or sophomore) and one upper division (i.e., junior or senior) student. Each student is assumed to take seven high school courses. These courses require one-fifth of an FTE (full-time-equivalent) teacher, an allocation for supplies and materials, estimates of the annualized costs of hard cover and

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[1] More intensive and detailed studies of special education have also been conducted in California and across eighteen states as part of the Congressionally mandated study.

soft cover textbooks, and estimates of the annualized costs of furnishings and equipment.[2] The assumptions regarding the number of classes taken by students and the allocation of teacher time are consistent with the high school student and teacher course loads in both Chicago and New York City. Salary data from the Chicago Public Schools was used to cost out personnel resources.[3] No real satisfactory data was available within the limits of this study on the costs of textbooks, supplies and materials, and furnishings and equipment, so estimates of these amounts are taken from the AEFP/RCM Prototype Database. Since about ninety percent of instructional costs for most regular high school classes are allocated to teachers' salaries and benefits, any distortions that may exist are not likely to be significant.

In addition to the costs of instruction, Table 2 includes the delivery systems for providing site administration and support services. While the list of service delivery systems are taken from the AEFP/RCM Prototype Database, the resource requirements and school size values specified are derived from one of the regular high schools in New York. Once again, salaries from the Chicago Public schools were used to maintain consistency with the salaries of instructional personnel used in this table. No central administrative and support services are included since the focus of our analysis is on services at the school site.

According to the figures presented in Table 2, the total costs of site level services is approximately $2,600 to $2,700 per pupil with over seventy percent accounted for by instruction. The absolute dollar figures would be about twenty-five percent higher if average salaries and benefits for the New York City School System had been used in place of the Chicago Public School averages.

The differences between the lower and upper division students are that the upper division student is taking chemistry in place of health education and U.S. history in place of general social science. While there is little difference in cost between the general social science and the U.S. history course, the chemistry course is $108 per pupil more expensive than the

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[2]The detailed specifications underlying all of the service delivery systems presented in Table 2 are presented in Appendix B.

[3]Benefits were set at twenty percent. In fact, the actual benefit ratios vary considerably between school districts and the job titles and salary levels of the individual personnel categories.

health education course. This is primarily due to the higher costs of teacher time and of specialized furnishings and equipment. Chemistry classes meet five days each week in a regular classroom and one day per week in a lab requiring a total of six teaching periods out of a teaching week which consists of twenty-five periods. Thus, chemistry requires a 0.24 FTE teacher while most high school classes require a 0.20 FTE teacher in Chicago and New York City.

In addition to the differences in teacher costs, the annualized cost of furnishings and equipment that make up a chemistry classroom run over $7,000 relative to a cost of about $333 for a regular high school classroom used for almost all of the other courses included in the two profiles. In each case, it is assumed that these facilities are shared by five other classes (i.e., utilized by any one classroom about twenty percent of the time). The net impact of these differences in the cost of services amounts to just over $106 per pupil between the upper and lower division student.

Using the structure of service delivery outlined in Table 2 as a foundation, we can now proceed systematically to determine the major factors that might create differences in the costs of service delivery in a regular high school relative to the career oriented, exemplary high schools included in the case study. Specifically, the analysis will focus on the impact of variations in the number and composition of the student course load on the instructional as well as administrative and support service delivery system configurations (i.e., resource requirements in relation to the size—school or class size—of units of service delivery). The number and composition of the student course load will affect costs through variations in class sizes and the allocations of teacher time, supplies and materials, and specialized furnishings and equipment required to provide these services. At the same time, variations in the composition of course load may have an impact on the combination of resources necessary to administer and support the programs offered within the school.

Student Course Loads

As illustrated in Table 2, the standard course load for the regular high school student is seven periods of classes per day, five days per week. The classroom delivery systems for each period cost approximately $8,000 and about eighty-five to ninety percent of that is teacher salaries and benefits. This means that the standard instructional day for high school students requires 1.4 FTE teachers. The greater the number of class periods

TABLE 2

STANDARD HIGH SCHOOL STUDENT PROGRAMS

Service Delivery System (1)	Number of Pupils Served[a] (2)	Total Cost of Delivery System (3)	Cost per Pupil Served: Lower Div Pupil (4)	Cost per Pupil Served: Upper Div Pupil (5)
INSTRUCTION:				
DEPT INS: ART APPRECIATION	29	$9,099	$314	$314
DEPT INS: GENERAL ENGLISH	29	$8,173	$282	$282
DEPT INS: FOREIGN LANG: 2ND YR	29	$7,872	$271	$271
DEPT INS: HIGH SCHOOL MATH	29	$7,772	$268	$268
DEPT INS: GENERAL PHYSICAL EDUCATION	46	$8,382	$182	$182
DEPT INS: HEALTH	29	$7,789	$269	
DEPT INS: CHEMISTRY	29	$10,324		$377
DEPT INS: SOCIAL SCIENCE, GENERAL	29	$7,872	$271	
DEPT INS: U.S. HISTORY	29	$7,707		$268
TOTAL COSTS OF INSTRUCTION:			$1,857	$1,963
SITE ADMINISTRATION AND SUPPORT SERVICES:				
HIGH SCH: GENERAL ADMINISTRATION	3,191	$1,032,445	$324	$324
LIBRARY SVS: HIGH SCH	3,191	$145,984	$46	$46
COUNSELING & GUIDANCE: HIGH SCH	3,191	$388,668	$122	$122
MEDICAL SERVICES: HIGH SCHOOL	3,191	$70,711	$22	$22
MAINTENANCE SERVICES: HIGH SCH	3,191	$125,155	$39	$39
CUSTODIAL SVS: HIGH SCH	3,191	$294,558	$92	$92
UTILITY SVS: HIGH SCH	3,191	$190,000	$60	$60
SECURITY SERVICES: HIGH SCH	3,191	$135,223	$42	$42
TOTAL COSTS OF SITE ADMIN & SUPPORT SVS			$747	$747
GRAND TOTAL COSTS (INSTRUC & SITE ADM/SUPP):[b]			$2,604	$2,709

[a] The number of pupils served represents a class size for the instructional programs and school size for the site administration and support services.

[b] This grand total costs includes only those costs incurred at the site level. It excludes all costs of program and general administration and support services (e.g., business and fiscal management, the superintendents offices, personnel, curriculum development, transportation services, and operations management).

per day demanded by students, the greater the number of teachers required to staff the school and, hence, the higher the per pupil cost of instructional services.

The New York City School System publishes statistics on the average number of subjects taken per pupil by broad classes of subject areas for each high school. Table 3 presents paired comparisons between the six case study schools and the corresponding regular high schools chosen for this analysis. The citywide averages are also presented separately for the vocational-technical and the academic-comprehensive high schools.

With one exception, the level of course demand observed in Table 3 in the sample high schools exceeds that of the comparison schools. As the numbers in column (7) of Table 3 show, five of the six schools reveal a course demand that is between seven and fifteen percent higher per pupil. Table 3 also presents a citywide comparison at the bottom of the table which shows that vocational-technical high schools exhibit a four percent higher course demand, on average, than academic-comprehensive high schools. The greater course demand in the case study schools and in vocational-technical schools means a relatively greater need for teacher time and higher per pupil cost of instruction ranging from four to fifteen percent.

When the reimbursable classes are added, the percentage difference in costs falls somewhat. For the most part, these reimbursable services include coursework designed for culturally or language disadvantaged students.[4]

Among the sample student programs requested in the data collection effort from the exemplary high schools, it was not atypical to find the upper division students assigned to eight and, in some cases, nine periods of coursework per day. This appears to be particularly true among the students attending the vocational-technical schools. An eight period day consisting of eight separate courses would be associated with an increase in instructional costs of approximately 14.3%. That is, an eight period day involves one-seventh more coursework, including 1.6 as opposed to 1.4 FTE teachers, and proportionately more dollars allocated to other resources assuming no differences in the relative amounts of supplies, materials, textbooks, and furnishings and equipment.

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[4]Only about two percent of the FTE teacher positions and twelve percent of the hourly allocations of reimbursable funds are allocated to Vocational Education Act (VEA) programs.

The Chicago Public Schools have altered this factor in the case of some vocational-technical students by defining two types of teacher work days: a six hour and an eight hour day. The principals of the two vocational schools in Chicago indicated that virtually all teaching assignments are full-time. The six hour teacher is expected to teach five periods per day (twenty-five per week) accompanied by professional preparation, study hall supervision, and office hours for subject matter counseling for students. The eight hour teachers are usually in the trades-vocational subjects. These teachers are paid twenty percent more in salary and teach two courses each lasting four periods per day accompanied by professional preparation and office hours for subject matter counseling for students. That is, each of the two classes requires a 0.6 FTE teacher. Thus, a student taking an eight period day would require a part of each of four six hour teachers (i.e., four teachers at 0.2 FTE for a total of 0.8 FTEs) for the regular high school courses and one-half of an eight hour teacher (i.e., a total of 0.6 FTEs). The total teacher allocation is 1.4 which is exactly the same as that required for a student taking a seven period schedule of regular high school classes.

Average Class Sizes and the Composition of the Student Course Load

Table 4 presents average class size data for the New York City School System. Average class sizes for the category "other subjects," which are those most often taken by high school students according to Table 3, range from twenty-six to thirty-one students. The required music and physical education class sizes range for the most part between forty and fifty students, while the reimbursable classes (more often than not being remedial or special classes) are significantly smaller, ranging from an average of sixteen to twenty-two students per class.

Of particular interest to our analysis are the differences in class sizes exhibited in column (3) for the trades and shop classes. Across the twelve sample and comparison high schools, the average class sizes for trades and shop classes are seventeen percent lower than for other subjects. The sample high schools showed almost a ten percent lower class size for trades and shop classes relative to other subjects, while the comparison high

TABLE 3
AVERAGE NUMBER OF SUBJECTS PER PUPIL BY SUBJECT AREA
NEW YORK CITY SCHOOL SYSTEM

School (1)	Other Subjects (2)	Trades & Shop (3)	Required Music (4)	Physical Educ (5)	Total (6)	% Diff. Total Course Demand (7)	Reimbursable[a] (8)	Grand Total (9)	% Diff. Grand Total Course Demand (10)
COMPARISON GROUP 1									
BROOKLYN TECHNICAL	5.47	1.24	0.04	0.58	7.33	7.16%		7.33	1.24%
JAMES MADISON	5.94	0.10	0.05	0.75	6.84		0.40	7.24	
COMPARISON GROUP 2									
AVIATION	3.82	3.21	0.06	0.50	7.59	13.62%	0.19	7.78	12.75%
BAYSIDE	5.72	0.13	0.04	0.79	6.68		0.22	6.90	
COMPARISON GROUP 3									
FASHION INDUSTRIES	3.29	2.95	0.11	0.39	6.74	7.84%	0.44	7.18	4.66%
JULIA RICHMAN	5.00	0.42	0.06	0.77	6.25		0.61	6.86	
COMPARISON GROUP 4									
MANHATTAN CTR	5.64	0.38	0.08	0.90	7.00	-9.68%	0.09	7.09	-11.26%
A. PHILIP RANDOLPH	6.77			0.98	7.75		0.24	7.99	
COMPARISON GROUP 5									
MURRY BERGTRAUM	5.99	0.04	0.09	0.47	6.59	10.20%	0.24	6.83	-3.67%
SEWARD PARK	5.10	0.08	0.07	0.73	5.98		1.11	7.09	
COMPARISON GROUP 6									
JANE ADDAMS	5.28	0.86		0.60	6.74	15.21%	0.58	7.32	3.54%
MORRIS	4.94		0.09	0.82	5.85		1.22	7.07	
CITY WIDE COMPARISON									
VOC./TECH.	3.89	2.21	0.10	0.55	6.75	4.33%	0.45	7.20	2.56%
ACAD./COMP.	5.29	0.25	0.08	0.85	6.47		0.55	7.02	

Source: Comparative Analysis of the Organization of High Schools, New York City Board of Education, The High School Division, 1987-88, pp. 70-71.

[a] Reimbursable subjects are funded by non tax-levy sources and include such programs as Chapter I Reading and Math, Chapter VII Bilingual, and Vocational Education Act (VEA) among others.

TABLE 4
AVERAGE CLASS SIZE BY GENERAL SUBJECT AREA
NEW YORK CITY SCHOOL SYSTEM

School (1)	Other Subjects (2)	Trades & Shop (3)	Required Music (4)	Physical Educ (5)	Reimbursable (6)
COMPARISON GROUP 1					
BROOKLYN TECHNICAL	31.47	27.54	48.40	40.26	
JAMES MADISON	31.77	23.55	46.67	47.43	22.63
COMPARISON GROUP 2					
AVIATION	28.97	23.34	39.00	41.48	17.20
BAYSIDE	30.21	22.64	52.00	42.53	16.23
COMPARISON GROUP 3					
FASHION INDUSTRIES	29.34	26.19	47.20	52.19	19.83
JULIA RICHMAN	30.69	17.00	46.25	46.25	17.92
COMPARISON GROUP 4					
MANHATTAN CTR	28.85	27.19	48.50	46.38	21.20
A. PHILIP RANDOLPH	26.32			54.04	20.80
COMPARISON GROUP 5					
MURRY BERGTRAUM	28.10	31.33	45.80	43.10	20.85
SEWARD PARK	27.53	21.46	36.17	43.09	22.25
COMPARISON GROUP 6					
JANE ADDAMS	29.16	23.19		45.75	21.45
MORRIS	27.83		45.00	44.21	19.74
CITY WIDE COMPARISON					
VOC./TECH.	28.33	24.13	35.51	43.78	18.33
ACAD./COMP.	29.04	23.58	44.49	45.54	20.58

Source: Comparative Analysis of the Organization of High Schools, New York City Board of Education, The High School Division, 1987-88, pp. 72-73.

[a] Reimbursable subjects are funded by non tax-levy sources and include such programs as Chapter I Reading and Math, Chapter VII Bilingual, and Vocational Education Act (VEA) among others.

schools averaged twenty-nine percent lower trades and shop class sizes.[5] Citywide, the trades and shop classes are 14.8% smaller in vocational-technical high schools and 18.8% smaller in academic-comprehensive high schools.

The reason for the particular interest in trades and shop is that most of the high schools included in the case studies are career or vocationally oriented schools in which students spend a significant portion of their day taking specialized vocational-technical classes that fall into the category of trades and shop. Combining the information in Table 3 on the composition of student course loads with the average class size information in Table 4, one can see that high schools oriented toward vocational and technical fields will tend to require greater numbers of teachers per pupil both because of the somewhat higher course demand discussed earlier and because of the smaller class sizes necessitated by the course offerings in trades and shop classes. The greater numbers of teachers per pupil required to provide services will ultimately result in higher per pupil costs.

It is interesting to note that both the Chicago Public Schools and the New York City School System explicitly recognize the foregoing differences in the numbers of courses, the average class sizes and the composition of student course loads, and their impact on variations in the need for teaching positions between vocational-technical schools and the academic-comprehensive high schools. Chicago's formula is a relatively simple and straightforward recognition of this difference. Using the regular student membership (i.e., total membership less self-contained special education membership), the Chicago Public Schools determines the number of regular high school teaching positions required by dividing student membership by 23.1, a fixed ratio of pupils to teachers. For technical high schools, this student membership figure is divided by 22.1.[6] For vocational high schools, the target pupil-teacher ratio is 21.1.

The New York City budget allocation formula is more elaborate and sophisticated in its recognition of the differences between vocational-technical and academic-comprehensive

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[5]Excluding the one high school with a larger average class size for trades and shop classes, the sample schools exhibit almost a fourteen percent lower class size for *trades and shop* relative to *other subjects*.

[6]The formula also applies this same ratio of 22.1 to general high schools with memberships of 1,500 or less.

high schools. The calculation of the amount of teacher time required for instruction on the general education budget takes into account the total school enrollment, the average number of subject periods scheduled per pupil per day, and the contractual class size maximums. The structure of the allocation formula is presented in Table 5. The universal curriculum index reflects the mix of subjects required to implement a seven period, five and one-half hour instructional day as required by the regulations set out by the New York State Commissioner of Education. The differences in the universal curriculum index between the academic-comprehensive and the vocational-technical high school "was determined by studying a model of the instructional need to fulfill the diploma requirements for vocational and non-vocational programs" (see New York City Board of Education, 1987-88, p. iv). The class size weighting factor is determined as the ratio of the standard maximum class size of thirty-four to the contractual maximum class size for each subject area. The weighted curriculum index is determined by multiplying the universal curriculum index by the class size weighting factor for each type of school (i.e., academic or vocational). To see how this is implemented, the formula for allocating teacher time is applied below to one school of each type with identical enrollments of 2,500 pupils. The formula is as follows:

$$\frac{ENR \times WCI \times 1.0735}{5 \times 34} = \text{TOTAL TEACHING POSITIONS}$$

where ENR = school enrollment,
WCI = weighted curriculum index
1.0735 = breakage factor

As explained by the person responsible for calculating the teacher allocations, the breakage factor makes extra resources available to the school to allow for the fact that it is not always possible to implement classes at the average size (i.e., "things don't always come out evenly").

Example A. Academic/Comprehensive High School

$$\frac{2{,}500 \times 6.78 \times 1.0735}{5 \times 34} = 107.03$$

Example B. Vocational/Technical High School

$$\frac{2{,}500 \times 7.30 \times 1.0735}{5 \times 34} = 115.24$$

TABLE 5

STRUCTURE OF THE FORMULA USED IN
THE NEW YORK CITY SCHOOL SYSTEM FOR
DETERMINING THE ALLOCATION OF TEACHER TIME

Subject Area	Universal Curriculum Index Acad.	Voc.	Maximum Class Size	Class Size Weighting Factor	Weighted Curriculum Index Acad.	Voc.
PHYSICAL EDUCATION	0.875	0.875	50	0.68 (=34/50	0.60	0.60
MINOR MUSIC	0.125	0.125	50	0.68 (=34/50)	0.09	0.09
TRADES AND SHOP	0.375	0.375	28	1.22 (=34/28)	0.46	3.36
ALL OTHER SUBJECTS	5.625	5.625	34	1.00 (=34/34)	5.63	3.25
TOTAL	7.000	7.000			6.78	7.30

Source: Comparative Analysis of the Organization of High Schools, New York City Board of Education, The High School Division, 1987-88, p. iv.

The vocational-technical school receives 7.67% more teacher time for the same number of students.

While there are additional costs associated with providing the instructional program in the vocational-technical high schools, Tables 3 and 4 also reveal what appear to be some efficiencies. Specifically, those schools classified as vocational-technical high schools exhibit somewhat higher average class sizes in the trades and shop both in absolute and relative terms than the academic-comprehensive high schools. This evidence is at least consistent with the notion that the larger critical mass of students demanding specialized classes in vocational-technical high schools allows them to spread the allocation of teacher positions to specialized subject areas over a larger number of students. If there are only small numbers of students demanding certain specialized classes in the academic-comprehensive high schools, then class sizes might tend to be somewhat smaller. From this perspective, the more specialized or focused a school is, the more effectively it can use its resources to provide these special subjects.

Differences in Teachers' Salaries

So far we have observed that there are differences in the costs of providing vocational or career oriented education because of differences in the allocation of teacher time. But are there differences in the salaries paid to vocational-technical teachers relative to regular high school teachers? Differences in compensation can come in terms of higher pay for the same workload or a lesser workload for the same pay.

In terms of the nominal dollars paid for a given amount of teacher time, it would appear that there are no salary differentials for teachers in the vocational fields. According to officials of both the Chicago and New York City school systems, all teachers are paid according to the same salary schedule for the same basic workload. The salary schedule differentiates pay only on the basis of longevity in the district and educational credits or degree levels attained. All teachers, vocational and other high school teachers, must be certified in their respective subject areas, and there are no explicit salary increments paid by subject or teaching area.

However, as described previously, the Chicago Public Schools have established both a six hour and an eight hour work schedule for teachers. The six hour (or eight period) work schedule is the standard five period teaching day with three additional periods of duties (i.e., one period of professional preparation, one period of office hours, and one period of study hall supervision), while the eight hour (or ten period) work schedule is eight periods of teaching (i.e., usually two vocational classes lasting four periods per day each) with two additional periods of duties (i.e., one period of professional preparation and one period of office hours). The eight hour work schedule pays twenty percent more in salary. Based on the discussions with the central office staff of the district and the principals, this eight hour day was established primarily for vocational teachers in certain specialized subject areas requiring the special configuration of teaching periods. Thus, it is a way of being able to offer a higher level of pay to these certain specialized areas of teaching. However, as was pointed out earlier, the amount of the differential (twenty percent) actually allows the district to keep the costs of some eight period student course loads (i.e., consisting of four one-period courses and one four-period course) the same as the regular seven period day (i.e., seven one-period courses).

Nevertheless, the importance of building in salary differentials for teachers in certain trades is that it does allow the district to compete somewhat more effectively for these teachers who are able to earn more in the private sector in their chosen skill area. As one principal in Chicago expressed it, good trades-vocational teachers "are as scarce as hen's teeth." As indicated in the case studies, there are shortages of certain trades-vocational teachers in part because of the greater financial rewards in the private sector. Most certainly some of the individuals who choose to teach rather than work in the private sector do so because the working conditions associated with teaching are more desirable. Some principals indicated that it was not uncommon for the trades teachers to work in their chosen fields during the summer months. This has the advantage of not only providing them with additional income, but this also allows them a way of keeping in touch with changes in the workplace which might make them more effective teachers.

At the same time, the fact that there are shortages of teachers suggests that it may be necessary to employ underqualified individuals in these positions. Future research in this area should examine the extent to which there are underqualified individuals teaching in each subject area and to determine the extent to which vocational or trades areas are more

subject than other areas such as math and science in which underqualification has been a chronic problem.

The Costs of Nonpersonnel Resources

It is very difficult to obtain information on the variations in the costs of supplies, materials, textbooks, and specialized furnishings and equipment for individual classrooms. Program budgets rarely allow the analyst to identify specific courses and the allocations of these non-personnel expenditures, and the accounting procedures for handling capital items make it virtually impossible to employ budget data for comprehensive cost comparisons.[7] Data collection for most of these kinds of expenditures is a time-consuming and tedious exercise. Moreover, for most types of regular high school classes, these expenditures only account for about ten percent of the instructional cost. Teacher salaries and benefits usually account for ninety percent of classroom costs. However, in the case of certain vocational and trades courses, these non-personnel costs account for a larger percentage of total instructional costs.

Both Chicago and New York City school systems build in systematic differences in supply allocations (i.e., for consumable, non-capital items) that provide some recognition of the differences in the supplies required for different subject areas. Tables 6 and 7 present the per pupil budget allocation rates used by the Chicago and New York City school systems, respectively. In Chicago, commercial art, welding, and machine shop classes are allocated just over thirty dollars per pupil for supplies while regular high school classes in English, foreign language, and mathematics received 48¢. The allocation for physics and chemistry were in the $5 to $8 range.

As previously illustrated, students attending vocational and technical high schools, like those included in our case studies, will demand more specialized classes with a laboratory or shop component. Even those schools that are less oriented toward vocational education, but are heavily oriented toward college preparation in technical fields of science and engineering, will exhibit a higher relative demand for classes like chemistry, physics,

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[7]Textbooks, as well as furnishings and equipment, have a useful life of more than one year and are, therefore, considered capital items.

engineering, or electronics which include laboratory components. These laboratories or shops usually require fairly heavy investments of specialized furnishings and equipment as well as specialized classroom facilities.

So far, this discussion has focused on the variations in the annual recurring costs of instruction. The investment in furnishings and equipment represents a start-up cost that must be amortized over the life of these capital items. To allow cost comparisons between various courses of study, one must annualize these capital costs so that they may be combined with the annual recurring costs of instruction. For example, to compare the costs of providing high school English with the costs of a course in chemistry or metal shop requires inclusion not only of the costs of teacher time and the supplies and materials, but also the costs of the capital items required to provide one course relative to the other. Annualization of capital costs requires a method of spreading these capital costs over the useful life of each of the items of furnishings and equipment required to provide a certain high school course.

There are two components involved in the annualization of capital costs: one involves spreading the purchase price of the capital item over the years of life (i.e., depreciation) and the other involves accounting for the cost of financing the original investment (i.e., the opportunity cost). A straight-line method of depreciation will be utilized and annualized capital cost estimates will be presented using three alternative rates of interest (discount rates): zero (i.e., depreciation only), five, and ten percent.

Presently, public sector accounting procedures rarely, if ever, take into account the depreciation of capital assets. Major capital expenditures are usually funded out of budget accounts separate from the regular expenditures on salaries and supplies. School officials often find themselves funding the replacement of furnishings and equipment out of revenue windfalls. This occurs largely because state regulations often restrict the capacity of local educational agencies to borrow for capital expenditures of this type and do not explicitly recognize capital costs in school finance formulas. The fiscal context within which these local public agencies operate provides no incentives to account for the annualized portion of capital expenditures. The result is a reduced effort to plan for capital replacement. This is a problem that arises out of current public sector accounting procedures, budgeting regulations, and funding formulas. Alternative approaches to its resolution are beyond the scope of the current report. Nevertheless, to account for the total costs of school operations, the present analysis will explicitly include the annualized costs of capital.

TABLE 6

PER PUPIL ALLOCATIONS FOR SUPPLIES BY SUBJECT AREA
FOR THE CHICAGO PUBLIC SCHOOLS

Subject Area	Per Pupil Amount
GENERAL EDUCATION	
English	$.48
Foreign Language	$.48
Mathematics	$.48
Music	$1.92
Physical Education	$.84
Social Studies	$.48
General Science	$1.08
Biology	$2.88
Chemistry	$7.44
Physics	$5.04
VOCATIONAL EDUCATION	
Commercial Art	$30.24
Drafting	$6.72
Welding	$30.24
Machine Shop	$30.24

Source: How School Budgets are Developed, The Chicago Public Schools, prepared by the Department of Financial Planning and Budgeting, February 1988, p. 79.

TABLE 7

PER PUPIL ALLOCATIONS FOR TEXTBOOKS AND SUPPLIES
BY SUBJECT AREA FOR THE NEW YORK CITY SCHOOL SYSTEM

The following amounts represent incremental allocations over and above the basic allocation of funds for instructional supplies by subject area. The basic allocation averages approximately $6.65 per pupil.

Subject Area	Per Pupil Amount[a]
HOME ECONOMICS, CHILD CARE & NURSING PROGRAM	
-Kitchen Supplies & Equipment	$142.50 per kitchen
-Apartment Supplies	47.50 per room
-Nursing & Child Care Supplies and Equipment	3.80
-Family Living Supplies & Perishables	1.90
-Clothing Supplies	4.75
-Foods Classes-perishables	9.50
-Nursing & Child Care-perishables	0.95
INDUSTRIAL ARTS AND VOCATIONAL EDUCATION	
-Business Office, secretarial training, dental and medical assisting	3.80
-Drafting, mechanical drawing, commerical art	4.37
-Transportation-automotive, aviation, and allied subjects, general shop, maritime trades, repairs, graphics arts & printing, plumbing communications, refrigeration & allied subjects, cosmetology	6.27
-Ceramics, crafts, wood, metals, photography, machine & metal shops, electronics	8.17

Source: Comparative Analysis of the Organization of High Schools, New York City Board of Education, The High School Division, 1987-88, p. xi.

[a] Unless otherwise noted, all dollar figures are allocated on a per pupil basis for classes meeting one period per day, five days per week. Classes meeting two periods per day would receive twice the indicated allocation. Kitchen supplies and Apartment supplies are allocated per kitchen and per room, respectively.

By accounting for these alternative rates of interest, the estimates presented in this report do take into account the time value of money. The capital costs represent the equivalent of the annual payment (or setaside) required by the school district to pay off the amount of funds invested in a particular capital asset over the useful life of that asset. The word "useful" is emphasized to distinguish it from a tax life. It is our intent to provide true estimates of the cost of capital rather than estimate the tax write off that might be taken in the private sector for the same capital asset.[8]

Tables 8, 9, and 10 present some capital cost estimates for selected courses. These estimates include the total start-up costs for providing the classroom furnishings and equipment. In addition, the annualized costs of capital are presented at zero, five, and ten percent. A zero rate of interest essentially means that the annualized cost will reflect only depreciation. The five and ten percent rates are simply presented as alternative rates that are commonly used to estimate the costs of capital and are reflective of present interest rates in the U.S. economy. The formula for calculating the annualized cost is

$$\text{(EQ. 1)} \quad \text{ANNUALIZED COST} = \frac{\text{STARTUP} \times R \times (1+R)^{\text{LIFE}}}{((1+R)^{\text{LIFE}} - 1)}$$

where STARTUP = start-up costs,
R = the rate of discount, and
LIFE = the useful life of the item.

The main difference between the tables is the source of information. The data in Table 8 come from the AEFP/RCM Prototype Database. This database contains for each course a detailed listing of the quantities, useful life, and purchase price (in 1984 dollars) for each item of furnishings and equipment required to provide the course. The original source of information was a series of data files developed by American Appraisal Associates, Inc. This firm conducts inventories, appraises each item, and maintains computer files for public and private firms interested in tracking the value of capital assets. To construct our prototype, AEFP staff organized the data on furnishings and equipment

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[8]Some public officials would argue that there is no need to account for the interest cost since public enterprises do not actually face this cost. The opportunity cost of capital reflected in the interest rate, however, is an actual cost to the society. Moreover, to the extent that local officials draw funds for capital outlay out of alternative investments (e.g., government bonds or bank accounts), they do sacrifice interest earnings in similar amounts.

obtained from American Appraisal Associates according to educational settings or classrooms which were identified on the computer files.

For the purposes of comparison, the capital cost estimates from the AEFP/RCM Prototype Database include some regular high school subjects as well as the vocational education subjects. As indicated in the table, the dollar figures are reported in 1984 prices.

Notice the first listing under regular high school subjects is subjects without labs. This represents the total start-up costs for a standard high school classroom for basic courses such as English, mathematics, and social science. For the most part, these start-up costs consist of book cases, a file cabinet, a lectern, a projector screen, a desk and chair for the teacher and the students' desks and chairs. The annualized cost including depreciation only is $173.28. At a ten percent rate of discount, this annualized cost is $332.59. Including the discount rate, this annualized cost represents that portion of depreciation plus the foregone earnings (or interest cost of repaying a loan) attributable to each year in which the items included are utilized for provision of this classroom. The importance of recognizing the discount rate as part of the cost is quite apparent when the differences between the annualized costs at zero and ten percent rates are shown. By not including an appropriate discount rate in annualizing capital costs, one would dramatically understate the social cost of investing in any of these educational activities.

Looking down the columns, one can observe the significant differences between the various high school courses with respect to the costs of furnishings and equipment. The start-up costs for biology, chemistry, and computer labs are in the $40,000 to $60,000 range. Under the heading vocational education, the courses in auto mechanics, auto shop, printing, and graphic arts all exceed $100,000 in start-up costs.

While the costs of teacher time will still comprise the majority of instructional costs, one can see that the mix of courses being offered in relation to the requirements for, and utilization rates of, capital resources will play a significant role in determining the overall costs of instruction. Although it is not uniformly true, the standard high school classrooms will be used from four to seven periods per day. However, in the case of more specialized courses, it is possible that these classrooms, shops, or laboratories may be used less often if there are not sufficient numbers of students expressing an interest in these areas of study. A major advantage of providing the more specialized schools is that it offers an opportunity for students with similar interests to be brought together onto a single campus facility to

TABLE 8

TOTAL COSTS OF FURNISHINGS & EQUIPMENT COSTS FOR SELECTED COURSES
FROM THE AEFP/RCM PROTOTYPE DATABASE
(Figures are in 1984 prices)

Course Descriptions	Total Start-up Cost	Annualized Costs of Capital		
		Depreciation Only	At a Discount Rate of: 5%	10%
(1)	(2)	(3)	(4)	(5)
REGULAR HIGH SCHOOL SUBJECTS				
SUBJECTS W/O LABS	$2,458.00	$173.28	$246.36	$332.59
BIOLOGY	$63,818.33	$6,138.40	$8,058.29	$10,285.01
CHEMISTRY	$44,389.65	$4,242.25	$5,575.25	$7,119.96
COMPUTER LAB	$48,981.00	$4,956.99	$6,411.00	$8,059.40
ART	$27,090.00	$1,870.53	$2,678.13	$3,635.61
INSTRUMENTL MUSIC	$112,813.00	$7,465.80	$10,827.14	$14,823.82
VOCAL MUSIC	$31,313.00	$2,665.17	$3,604.25	$4,702.26
PHOTOGRAPHY	$19,711.00	$1,802.83	$2,385.87	$3,052.02
PHYSICAL EDUC	$26,220.44	$2,164.03	$2,946.04	$3,858.91
VOCATIONAL EDUCATION SUBJECTS				
AUTO BODY SHOP	$63,696.00	$4,612.21	$6,502.06	$8,722.42
AUTO MECHANICS	$176,708.00	$15,333.57	$20,587.94	$26,670.33
AUTO SHOP	$126,836.00	$11,993.34	$15,743.58	$20,010.09
BUSINESS	$10,234.00	$711.63	$1,015.86	$1,375.33
BUSINESS MATH	$17,710.00	$1,749.12	$2,274.74	$2,872.39
TYPING	$35,044.00	$2,345.69	$3,385.77	$4,616.80
CONSTRUCTION	$18,204.00	$1,499.00	$2,036.97	$2,658.34
DRAFTING	$33,417.00	$2,285.07	$3,281.82	$4,464.99
ELECTRICITY	$32,653.00	$2,876.79	$3,842.00	$4,948.65
ELECTRONICS	$29,348.00	$2,618.17	$3,484.44	$4,474.72
ELECTRICAL	$16,771.00	$2,064.10	$2,565.65	$3,124.30
PRINTING	$168,808.00	$13,720.76	$18,720.10	$24,516.34
GRAPHIC ARTS	$104,142.00	$7,387.40	$10,483.36	$14,135.24
HOME ECONOMICS	$23,339.00	$1,972.38	$2,662.09	$3,456.48
SEWING	$33,529.00	$3,348.14	$4,341.54	$5,467.11
SHOP WOOD	$97,208.00	$6,941.56	$9,830.62	$13,235.54
SHOP METAL	$85,379.00	$6,049.74	$8,582.96	$11,565.14

Source: AEFP/RCM PROTOTYPE DATABASE, MAINFRAME VERSION 86.4, prepared by Jay Chambers and Thomas B. Parrish, Associates for Education Finance and Planning, 1988.

TABLE 9

TOTAL COSTS OF FURNISHINGS & EQUIPMENT COSTS FOR SELECTED COURSES IN THE SAMPLE HIGH SCHOOLS IN NEW YORK AND CHICAGO

Course Description (Year)[a]	Estimated Total Start-up Cost	Annualized Costs of Capital		
		Depreciation Only	At a Discount Rate of: 5%	10%
(1)	(2)	(3)	(4)	(5)
NEW YORK CITY SCHOOLS				
Aviation High School				
Avionics (1982)	$345,364	$28,079	$38,267	$50,027
Manhattan Center HS for Sci & Math				
Photography (1984)	$4,655	$378	$516	$674
Computerized Drafting (1987)	$15,189	$1,235	$1,683	$2,200
CHICAGO PUBLIC SCHOOLS				
Chicago HS for Agricultural Sci[b]				
Food Science (1988)	$30,000	$2,439	$3,324	$4,346
Shop (1988)	$46,000	$3,740	$5,097	$6,663
Computer Lab (1988)	$38,400	$3,122	$4,255	$5,562
Floral Display (1988)	$180,000	$14,634	$19,944	$26,074
Horticulture (1988)	$80,000	$6,504	$8,864	$11,588
Aquaculture (1988)	$30,000	$2,439	$3,324	$4,346

Source: Materials provided by principals at the sample of exemplary high schools included in the case study.

[a] The year in parentheses after the name of the course represents the year for which the capital cost estimates were made. An average life of 12.3 years is assumed in the calculations.

[b] The figures for the Chicago High School for Agricultural Sciences are estimates provided by the head teacher for the agricultural program at the school.

better utilize these expensive capital resources. A more comprehensive set of offerings may be achieved in a single facility, but it may require a more modest investment in the specialized furnishings and equipment in order to make such an approach economical. That is, to maintain the total costs per student served and still offer a comprehensive program will certainly require a trade off in the quality of the courses offered because students will have less access to any sophisticated equipment required to offer such a course.

Table 9 presents some estimates of capital costs for a very limited set of courses being offered in three of the schools included in the case study. Inventories of furnishings and equipment labeled by classroom are presently not readily available in either the Chicago or the New York City school systems. However, principals in two of the New York City schools provided copies of inventories for selected programs that had recently been established in their schools. The cost figures are presented along with the years in which the initial investments were made. In the Chicago High School for the Agricultural Sciences, the head of the agricultural science program provided some rough estimates of capital costs after conferring with members of his teaching staff.

Of the courses presented in Table 9, the avionics shop stands out as the most expensive at an initial cost of over $345,000 expended in 1982. One of the assistant principals in the school estimates that the cost of replacing this shop may actually be closer to twice this figure. Some of the equipment has been donated by industry to the school. This shop is used by two classes that meet a total of eight periods each day and enroll a total of forty-seven students. In addition, the shop is utilized two evenings each week for evening classes.

The cost estimates for furnishings and equipment in Table 10 were derived from computer data files maintained by the Southern California Regional Occupation Center (SCROC). SCROC maintains a file listing all of the items of furnishings and equipment by program (i.e., course). Among other things, this data file contained the purchase price and date of purchase for each item. Column (2) in Table 10 reports simply the sum of the initial purchase prices of each of the items in the inventory by program. Ideally, one would want to adjust the purchase prices of each item to reflect current replacement cost. No such adjustments are readily available or easily applied to a file of the size of the SCROC inventory. Therefore, a single composite index including the producer price indices for machinery and equipment, hardware, commercial furniture, and electronic equipment was

developed and applied uniformly to all items.[9] This index will clearly not adjust each item accurately. It is hoped that the deviations from the true adjustments will average out across the various items. After making these calculations, the values of some of the estimated replacement costs for selected programs were discussed with the business manager for the SCROC to check whether or not the numbers seemed realistic. It was agreed that the magnitudes did seem realistic for the selected programs.

It is important to realize that the capital figures presented in Tables 8, 9, and 10 are only estimates of the replacement costs of furnishings and equipment for the designated programs. They depend largely on how the content of these various courses of study are defined by the agencies within which the items have been found. Without a more detailed study, drawing on the expertise of individuals teaching in the various fields, it would be difficult to determine how richly these programs have been specified in terms of the lists of furnishings and equipment. Nevertheless, these figures for vocational education courses relative to some of the regular education programs provide some ranges of cost required to put these programs in place. The data brings home the realization that the costs of furnishings and equipment must be included as an important component of the decision to provide these kinds of programs to students.

Site Administrative and Support Services

We have seen the impact of some of the major factors affecting the costs of instruction in vocational-technical high schools relative to regular high schools. What factors underlie the variations in the costs of administration and support services? Looking back to

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[9]The value of the overall index is given by the following formula:

$$\text{Index} = MI \times .50 + HI \times .10 + FI \times .25 + EI \times .15$$

where Index = the composite price adjustment index,
MI = the machinery and equipment index,
HI = the hardware equipment index,
FI = the commercial furniture index, and
EI = the electronics equipment index.

The overall index is a weighted average of the items where the weights represent our estimates of the relative importance of each component in the overall list of items. These producer price indices were taken from the *United States Statistical Abstract for 1987*, U.S. Department of Commerce, Bureau of the Census (December 1987). The index numbers are from p. 449, table no. 736.

TABLE 10

TOTAL COSTS OF FURNISHINGS & EQUIPMENT COSTS FOR SELECTED COURSES
IN THE SOUTHERN CALIFORNIA REGIONAL OCCUPATION CENTER
(Figures in Columns 3-6 are inflated to 1988 prices)

Course Description	Total Initial Expenditure	Estimated Replacement Cost	Annualized Cost of Capital		
			Depreciation Only[a]	At a Discount Rate of: 5%	10%
(1)	(2)	(3)	(4)	(5)	(6)
RETAIL MERCHANDISING	$2,383.01	$4,741.53	$385.49	$525.37	$686.83
RETAIL GROCERY	$34,052.23	$45,321.64	$3,684.69	$5,021.75	$6,565.02
HOTEL-MOTEL OCCUPATIONS	$10,511.04	$12,883.01	$1,047.40	$1,427.47	$1,866.15
INTERIOR/ARCH DESIGN	$13,350.07	$16,631.96	$1,352.19	$1,842.86	$2,409.20
CHILD CARE	$220.00	$465.54	$37.85	$51.58	$67.43
HORTICULTURE	$8,769.42	$14,242.66	$1,157.94	$1,578.12	$2,063.10
COMPUTER OPERATIONS I	$64,797.73	$91,269.02	$7,420.25	$10,112.83	$13,220.67
COMPUTER OPERATIONS II	$37,761.85	$41,856.36	$3,402.96	$4,637.79	$6,063.06
DATA ENTRY	$81,687.68	$123,533.73	$10,043.39	$13,687.84	$17,894.34
OFFICE OCCUPATIONS	$39,168.03	$67,433.93	$5,482.43	$7,471.84	$9,768.07
WORD PROCESSING	$56,223.98	$68,498.56	$5,568.99	$7,589.81	$9,922.28
BANKING	$55,398.03	$99,403.27	$8,081.57	$11,014.12	$14,398.95
TECHNICAL DRAFTING	$28,574.71	$51,920.98	$4,221.22	$5,752.97	$7,520.96
GRAPHIC DESIGN	$31,477.06	$50,622.88	$4,115.68	$5,609.14	$7,332.92
PRODUCTION ART	$9,424.66	$63,741.59	$5,182.24	$7,062.72	$9,233.22
EMERGENCY MEDICAL TECHNICIAN	$15,628.85	$24,547.51	$1,995.73	$2,719.92	$3,555.80
DENTAL ASSISTANT	$33,520.02	$136,148.58	$11,068.99	$15,085.59	$19,721.65
MEDICAL ASSISTANT	$45,590.23	$162,942.90	$13,247.39	$18,054.47	$23,602.91
COSMETOLOGY	$21,670.57	$24,554.92	$1,996.33	$2,720.74	$3,556.88
HOSPITAL OCCUPATIONS	$7,874.51	$15,400.67	$1,252.09	$1,706.43	$2,230.85
MAJOR APPLIANCE	$9,202.61	$20,537.12	$1,669.68	$2,275.56	$2,974.88
ELECTRONICS	$61,344.97	$86,094.30	$6,999.54	$9,539.46	$12,471.09
COMPUTER REPAIR	$4,133.78	$4,391.46	$357.03	$486.58	$636.12
MACHINE TOOL	$241,473.39	$503,801.92	$40,959.51	$55,822.47	$72,977.67
WELDING	$44,364.37	$56,634.85	$4,604.46	$6,275.28	$8,203.78
AUTO BODY	$29,320.00	$34,796.93	$2,829.02	$3,855.58	$5,040.47
AUTO TUNE-UP	$65,971.95	$95,282.15	$7,746.52	$10,557.49	$13,801.99
AUTO PAINTING	$14,543.98	$20,195.10	$1,641.88	$2,237.67	$2,925.34
AUTO TRANSMISSION	$13,157.53	$21,408.31	$1,740.51	$2,372.09	$3,101.08
AUTO ENGINE	$39,170.27	$64,400.36	$5,235.80	$7,135.72	$9,328.64
AUTO/BOAT UPHOLSTERY	$14,205.95	$19,855.60	$1,614.28	$2,200.05	$2,876.16
COMMERCIAL REMODELING	$4,309.08	$4,452.11	$361.96	$493.30	$644.90

Source: Computerized inventory from the Sourthern California Regional Occupation Center, 1989.

[a] An average useful life of 12.3 years is assumed. This figure represents an average useful life of items used in the vocational education courses included in the AEFP/RCM Prototype Database.

the student programs presented in Table 2, one can see that the service components involved are the general administration of the high school, the library services, counseling and guidance, medical service, maintenance and custodial services, utility services, and security services. Although each of these services individually represents only a relatively small portion of the total cost of serving high school students, taken together they account for over twenty-eight percent of the site level costs. Moreover, analysis reveals that there are some systematic factors that do affect these costs for the schools included in the case studies. A comparison between the case study and comparison high schools of the average per pupil costs for these administrative and support service delivery systems is presented in Table 11. Each of the relevant areas is discussed below.

General Administrative Services

As defined in Table 2, the delivery system for general administration includes the office of the principal, the assistant principals for administrative and instructional supervision, the subject matter specialists, the classified personnel (i.e., aides and office workers) necessary to support the activities of the administrators, and the annualized costs of the furnishings and equipment associated with the central office.[10]

Figure 1 reveals some interesting patterns of difference between the case study and the comparison schools in New York City. The figure is a plot of the general administrative cost per pupil against school enrollment. The letters A and B represent points on this plot for the case study and comparison schools, respectively.

The first thing that stands out about the diagram is that it reveals an inverse relationship between administrative cost per pupil and school size.[11] The slope of the scatter plot between per pupil cost and size approaches zero as size increases. If we had adequately controlled for outcome levels (i.e., quality of services), such a finding with regard to the slope of the diagram would be consistent with the notion that the benefits from scale

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[10]The figures for annualized costs of all furnishings and equipment included under administrative and support services are derived from the *AEFP/RCM Prototype Database*.

[11]The reader might note that the per pupil costs of general administrative services displayed in Figure 1 exceed those used in Table 2. The reader is reminded that the salary levels used were those from the Chicago Public Schools.

economies are achieved quickly as size increases. Moreover, one cannot help but notice that, with one exception, the case study schools lie below and to the left of the comparison schools included in our analysis. As a group, the case study schools appear to be somewhat smaller and seem to operate at lower cost. Finally, it is interesting to further note that the pattern of economies of scale appears to hold true for each group of schools, the case study and comparison schools, taken separately.

There has been a great deal of literature on the issue of school size over the years suggesting that there are some important advantages of smaller high schools over larger ones. Moreover, the advantages most commonly associated with maintaining larger high schools (i.e., providing a more diverse set of course offerings and greater opportunities for specialized curriculum) are often overstated (see Chambers, 1981; Monk, 1987). As was observed in some of the case study schools, each student becomes more important in a small school environment. Faculty are more likely to encounter the same students over and over again through normal activities and they have greater opportunities to get to know individuals and to deal with specific problems that may otherwise interfere with learning progress. Smaller schools tend to exhibit greater levels of satisfaction and participation by students in school activities, and the benefits of these schools appear to be even more important for the "marginal" student (Barker & Gump, 1962). These are important differences in the environment of a school that may ultimately affect levels of achievement as well as the number of students who simply complete their education. Figure 1 suggests that there may be some additional administrative cost to maintaining these smaller schools. Nevertheless, there also may be some ways of offsetting some of these costs (e.g., by having personnel serve as administrators as well as spending some time teaching in the classroom). Notice that our case study schools lie almost uniformly below the comparison schools on the diagram.

Security Costs

There are clearly many factors that affect the level of security services within a given school. Other than those factors related to the neighborhood in which the school is located, there are two sets of forces that may cause the variations in the cost of security services between the case study and comparison schools to go in opposite directions. One set of forces operates on building security, while the other operates on personnel security.

TABLE 11

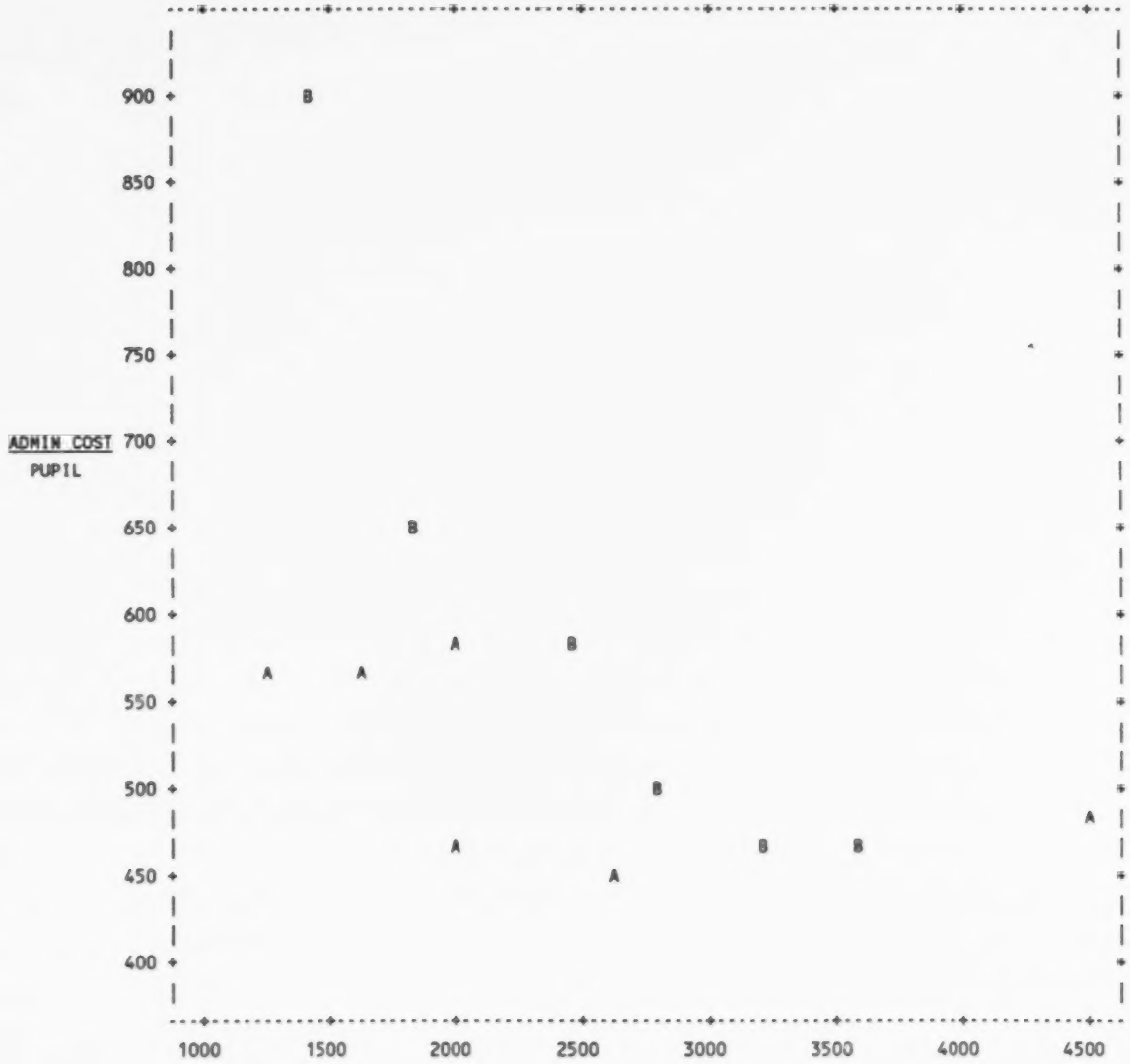
COMPARISON OF AVERAGE ADMINISTRATIVE AND SUPPORT COSTS FOR CASE STUDY AND COMPARISON SCHOOLS IN NEW YORK CITY

Description	Average Per Pupil Cost: Case Study Schools	Average Per Pupil Cost: Comparison Schools	Percent Difference 100x[(2)/(3)-1]
(1)	(2)	(3)	(4)
GENERAL ADMINISTRATIVE SERVICES	$504.95	$551.71	-8.48%
SECURITY SERVICES	$65.07	$80.12	-18.78%
COUNSELING & GUIDANCES SERVICES	$109.86	$126.83	-13.38%
SOCIAL WORKER SERVICES	$5.82	$18.38	-68.33%
LIBRARY SERVICES	$44.81	$48.04	-6.71%
CUSTODIAL AND MAINTENANCE SERVICES	$194.46	$163.83	18.70%

FIGURE 1

GENERAL ADMINISTRATIVE COST PER PUPIL PLOTTED AGAINST SCHOOL SIZE
FOR THE CASE STUDY AND COMPARISON SCHOOLS
IN THE NEW YORK CITY SCHOOL SYSTEM

A = A Case Study School
B = A Comparison School



With regard to building security, the vocational-technical schools might have a security problem with all of the expensive equipment that needs to be protected during non-school hours. In the Chicago Public Schools, the budget divides security services into security for personal safety during school hours and building security after school hours. One of the two case study schools reports employing two night watchmen for building security, while neither of the comparison schools employ night watchmen for building security.

Personnel security is intended to provide safety for students and faculty during school hours. In this instance, one would anticipate that the exemplary urban high schools included in our case studies would exhibit somewhat lower costs since the students in most instances have applied and gone through an admissions process to get into these schools. The level of commitment to the school experience by the students would tend to be relatively higher and would therefore reduce the likelihood of disturbances that would require the intervention of security personnel. In general, the evidence is consistent with this hypothesis. In almost every case, the case study school revealed a lower per pupil cost of personnel security services in both the Chicago and New York City public schools. In the New York City high schools, the case study schools exhibited almost nineteen percent or approximately $15 lower per pupil security costs on average.

Counseling and Guidance/Social Work Services

Perhaps for some of the same reasons that personnel security services appear to be lower in the case study schools, we also find counseling/guidance services and social work services somewhat lower. As illustrated in Table 11, counseling and guidance services is thirteen percent (approximately $17 per pupil) lower in the case study schools, and social work services is sixty-eight percent lower ($5.82 per pupil in case study schools relative to $18.38 per pupil in comparison schools). This is consistent with the hypothesis that students at these exemplary urban high schools need fewer counseling and social work services because they already have a better idea than the students attending the regular high schools of what their goals are and how to attain them. To what extent the school environment itself is capable of creating this kind of impact is a matter for further investigation. Perhaps a smaller school environment is one contributing factor. It cannot be overlooked, however, that these schools simply serve a more select student body that needs fewer support services in these areas.

Library Services

The cost of library services also appears to be somewhat lower in the case study schools. There is no apparent reason for this; however, the difference is fairly small, amounting to just over $3.00 per pupil (or 6.71% less).

Custodial, Maintenance, and Operations

Custodial, maintenance, and operations services appear to be more expensive in the case study schools and with some fairly clear explanations. In New York City, the amount of the difference averages over $30 per pupil or 18.70%.[12] In the case of the Chicago high schools, the vocational-technical schools cost almost twice as much to provide custodial and maintenance services as the academic-comprehensive high school (i.e., $610 versus $311 per pupil).[13]

One reason for these differences in cost arises out of the significant differences in the square footage of building space per pupil between vocational-technical and regular academic-comprehensive high schools. In New York City, for example, the case study high schools had forty percent more floor space per pupil than the comparison schools (i.e., the case study schools have about one-hundred and thirty-one square feet of floor space per pupil , while the comparison schools had about ninety-two square feet of floor space per pupil). This is not surprising given the fact that the vocational-technical high schools will tend to have a relatively larger number of large classrooms, shops, or laboratories for providing the specialized courses. The costs for custodial services are higher in the vocational-technical schools because these two districts, like many districts across the country, allocate resources to custodial and maintenance services based on the square footage of the buildings rather than on the number of pupils.

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[12]The New York City School System contracts for custodial services at the site level.

[13]These dollar figures are not directly comparable to those figures presented in Table 11 for New York City because of wage differences and more importantly differences in what services are included under the budget category *operation of plant*. For example, Chicago includes utility services under this budget category, while utilities were not included in the New York City data. Thirty to forty percent of the total operation of the plant budget was allocated to electricity and fuel for heating.

In addition to affecting the allocation of custodial and maintenance services, square footage of a school building will be a major determiner of the usage of utility services (i.e., electricity and heating). Even with the same rate of utilization between the two groups of high schools, one would expect a forty percent difference in the level of utility costs between the vocational-technical and regular high schools based on the relative allocations of square footage alone. In addition, one would also expect that the utilization of power and heating in the vocational-technical high school would be relatively higher than the regular high school because of the more intensive use of heavy power equipment and because of classrooms with higher ceilings that would tend to require more heating.

Construction Costs

Although the costs of school building construction have not been addressed in any of the cost estimates above, it is interesting to note that the larger school facilities required for vocational-technical education do imply higher costs of school building construction. According to one source, using figures based on the purchasing power of the dollar in 1985, the costs per square foot for a new school building would be $58.19 in Chicago and $66.98 in New York City.[14] Using these figures along with the additional square footage per pupil required for the average vocational-technical high school included in our case study schools, the additional cost of construction associated with attending a vocational-technical high school would amount to $2,269 per pupil in Chicago and $2,612 per pupil in New York City.[15]

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[14]These figures are based on information obtained from the *Boeckh Building Valuation Manual*, produced by the American Appraisal Associates, Inc., of Milwaukee, Wisconsin (1985). There is actually a range of costs between about $34 to $41 that could be used for the base valuation. The estimates presented here are for a two to four story, steel frame, concrete block school building with a base cost of $36.60 per square foot. To adjust for the differences in wage rates and material prices, American Appraisal Associates also produces a series of *Time-Location Multipliers* as part of the same building manual. This manual provides a series of indices that adjust the cost of construction for changes over time (to July, 1985, in this case) and differences across locations within the United States identified by the first three digits of the zip code. These values for the relevant areas of Chicago and New York City are 1.593 and 1.83, respectively, which yield the costs per square foot estimates of $58.19 and $66.98 reported in the text.

[15]Total costs per student at approximately one-hundred and thirty-one square feet per pupil in a vocational-technical school would amount to $7,623 in Chicago and $8,774 in New YorkCity.

Using the Chicago values as a base and assuming a forty year life and a ten percent rate of discount, the total annualized cost per pupil for school construction is $547 for the regular high school and $779 per pupil for the vocational-technical high school. The annualized incremental cost over a forty year life of the building is $56.73 per pupil in Chicago and $65.30 per pupil in New York City, assuming depreciation only (a zero rate of social discount). The annualized incremental cost for the vocational student is $232 per pupil.

Summary and Conclusions

What are the costs of vocational-technical education? What has been learned from an examination of the various components of costs of operation? Table 12 brings all of these various elements together and provides a foundation for further comparisons. The per pupil costs of educating four different types of students are presented in Table 12. All the costs of personnel and non-personnel resources, including the annualized costs of furnishings and equipment as well as construction, are included in the table. The annualized costs of school construction are added in at the bottom of the table.

Columns (3) and (4) of Table 12 present the per pupil figures for educating regular high school students: one lower division and one upper division student. These figures are taken directly from the information presented in Table 2 and are reproduced here for ease of comparison. Columns (5) and (6) present the cost of serving a student interested in auto repair. One configuration presents the student taking six regular high school courses per day and a one period per day auto repair class. The alternative configuration presents a more intensive four period per day class in auto repair along with three regular high school subjects. This second pattern is more typical of the vocational-technical schools included in the case studies. The programs provided to us by the schools indicated that upper division students more often than not were taking multiperiod courses in their areas of specialization (e.g., electronics, avionics, sheet metal, engineering). Lower division students tended to take similar patterns of basic introductory and academic courses in all high schools.

Based on the results presented in Table 12, the four period per day auto repair student costs about 11.8% more to serve during this year of upper division coursework than

TABLE 12

STANDARD HIGH SCHOOL STUDENT PROGRAMS COMPARED TO
ALTERNATIVE VOCATIONAL HIGH SCHOOL PROGRAMS

Service Delivery System	Number of Pupils Served[a]	Cost per Pupil Served: Regular High School Lower Div Pupil	Regular High School Upper Div Pupil	Voc Ed H.S. Auto Repair (1 period per Day)	Voc Ed H.S. Auto Repair (4 periods per day)
(1)	(2)	(3)	(4)	(5)	(6)
INSTRUCTION:					
DEPT INS: ART APPRECIATION	29	$314	$314	$314	
DEPT INS: GENERAL ENGLISH	29	$282	$282	$282	$282
DEPT INS: FOREIGN LANG: 2ND YR	29	$271	$271		
DEPT INS: HIGH SCHOOL MATH	29	$268	$268	$268	
DEPT INS: GENERAL PHYSICAL EDUCATION	46	$182	$182	$182	$182
DEPT INS: HEALTH	29	$269		$269	
DEPT INS: CHEMISTRY	29		$377		
DEPT INS: SOCIAL SCIENCE, GENERAL	29	$271		$271	
DEPT INS: U.S. HISTORY	29		$268		$268
DEPT INS: AUTOMOTIVE REPAIR,1 PERIOD/DAY	24			$490	
DEPT INS: AUTOMOTIVE REPAIR,4 PERIODS/DAY	24				$1,394
TOTAL COSTS OF INSTRUCTION:		$1,857	$1,963	$2,076	$2,126
SITE ADMINISTRATION AND SUPPORT SERVICES:[b]					
HIGH SCH: GENERAL ADMINISTRATION	3,191	$324	$324	$297	$297
LIBRARY SVS: HIGH SCH	3,191	$46	$46	$37	$37
COUNSELING & GUIDANCE: HIGH SCH	3,191	$122	$122	$106	$106
MEDICAL SERVICES: HIGH SCHOOL	3,191	$22	$22	$22	$22
MAINTENANCE SERVICES: HIGH SCH	3,191	$39	$39	$46	$46
CUSTODIAL SVS: HIGH SCH	3,191	$92	$92	$109	$109
UTILITY SVS: HIGH SCH	3,191	$60	$60	$84	$84
SECURITY SERVICES: HIGH SCH	3,191	$42	$42	$34	$34
TOTAL COSTS OF SITE ADMIN & SUPPORT SVS		$747	$747	$735	$735
ANNUALIZED COSTS OF SCHOOL CONSTRUCTION		$547	$547	$779	$779
GRAND TOTAL COSTS (INSTRUC & SITE ADM/SUPP)		$3,151	$3,257	$3,590	$3,640

[a] The number of pupils served represents a class size for the instructional programs and school size for the site administration and support services.

[b] The figures for site administration and support services are modified under the vocational school alternative to reflect the percentage differences in per pupil costs observed in Table 11. Note that the absolute dollar values will not match up because of salary differences and some differences in definition of the categories. No adjustment was used for medical services since no data were available to make this adjustment. Utility services were adjusted by 40% figure based on the differences in square footage alone. Custodial and maintenance services were adjusted using the 18.70% figure reported in Table 11 corresponding to custodial and maintenance services combined.

the regular high school upper division student.[16] The costs of instruction and the site administration and support costs are 5.6% [=100 x {($2,126+$735)/($1,963+$747) - 1}] higher for the auto repair student, while the construction costs average out to be 42% [=100 x (779/547 - 1)] higher. Construction costs average out to be about twenty-one percent of the total cost per pupil for the auto repair student, while they amount to about seventeen percent for the upper division regular high school student.

Of course, it is important to realize that these figures would vary depending on the type of student used for the comparison and the assumptions built into the delivery system configurations on which these cost estimates are based. First, it should be noted that the costs of instruction are not likely to differ much between lower division students attending the vocational-technical high school versus a regular comprehensive high school. The example in Table 12 that was highlighted above compared the programs of two upper division students. The last two years of high school are likely to differ more in costs of instruction than the first two years. This will tend to reduce the overall difference in the cost of a four year high school education.

In building the comparison in Table 12, we followed the approach to teacher time allocation used in the Chicago Public Schools. That is, the teachers assigned to the four period classes usually teach two of these during an eight hour day, and each class represents one half of a 1.2 FTE teaching load (i.e., the teacher is paid a 1.2 FTE salary as described earlier). Thus, the allocation of teacher time to this four period auto repair class is 0.6 FTE. The New York City School System would have assigned a 0.8 FTE teacher to this class since teachers are assigned five teaching periods per day, while the Southern California Regional Occupation Center (SCROC) would have assigned a 0.5 FTE teacher to the course. This represents anywhere from a decrease of $158 per pupil in the SCROC to an increase of $312 per pupil in teacher costs for New York City.

It is also of interest to note that students in the specialized, vocational or career oriented high schools will often find they must take a more rigorous schedule of classes in order to complete their diploma requirements during the four years of high school. Instead

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[16]The 11.8% figure is based on the following calculation from Table 12: 11.8% = (100 x $3,640 / $3,257).

of a seven period day, some of the students in the case study schools were taking eight period days, including three academic subjects, physical education, plus the intensive multi-period classes in subjects of specialization.

The class size specified for the specialized class in auto repair is set at the average for the vocational schools in New York City. Similar classes at SCROC ranged from eighteen to twenty-one pupils. Dropping class size for the auto repair course in Table 12 by just four students increases per pupil costs by about $279. Smaller classes in the specialized areas are not at all uncommon given what we observed in the case study schools.

About $417 of the total costs per pupil reflect the costs of furnishings and equipment for the auto repair course alone. This figure assumes that this course utilizes the auto repair shop for one half of the day and that a second section of the course uses it in the afternoon session. If there is not sufficient enrollment to utilize this shop twice a day, then the costs of furnishings and equipment associated with each pupil would double. To the extent that the school can utilize the shop during evening hours for adult education, the costs are spread over a larger number of students.

With this analysis in mind and looking back at Table 8 at the variations in the annualized costs of furnishings and equipment for various courses, one can now see the possible range of variation in per pupil costs associated with the investment in specialized furnishings and equipment. The auto shop requires an initial investment of about $127,000 with a total annualized cost of about $20,000 (at a ten percent discount rate). Accounting for the fifty percent utilization and the number of pupils enrolled in each class, the per pupil cost is $417. Similar assumptions can be made to determine the per pupil costs of other subject areas. In contrast to auto repair, one can see less expensive programs in drafting ($33,417 start-up), electricity ($32,653 start-up), and the computer lab ($48,981 start-up listed under regular high school). More expensive programs include auto mechanics ($176,708 start-up), printing ($168,808 start-up), the avionics shop ($345,364 in Table 9 at Aviation High School in New York), and the machine tool program ($503,801 in Table 10 at SCROC).

Given the costs of teacher time and alternative assumptions about the utilization of the heavy investment in furnishings and equipment, one can more readily see that there are some significant cost advantages associated with concentrating students with similar interests in one location. It not only provides an environment where students can feed off of the

interest of other students and share ideas, but it also makes the venture more economical by spreading the resources over a larger group of students. It does not necessarily require larger high schools to accomplish these objectives, however. As we have suggested, something in the interactions between faculty and students that is significant might be lost if schools are made larger. It does mean that if specialization is an important objective for students at this age, then there are some important arguments in favor of providing specialized high schools that are large enough to offer related opportunities to students, but small enough to maintain the significant aspects that favor the small school environment. The additional costs may be more than offset by the improved outcomes.

IMPLICATIONS FOR POLICY

The nine schools described in these case studies provide effective education for large numbers of urban students. Evidence of their success is seen in the following: (1) a high number of applications compared to openings; (2) high attendance rates among students and teachers; (3) low dropout rates; (4) lack of discipline problems; and (5) a tendency for the students to be successful after they graduate.

These schools share some common characteristics that have implications for educational policy. They are the following:

1. A safe and orderly environment conducive to teaching and learning.
2. A businesslike attitude on the part of students and teachers which creates an atmosphere of constructive energy in the school.
3. A warm and caring school climate.
4. An admissions process that makes students feel special—based upon student interest in the career specialty or set of subjects, not solely upon student test scores.
5. A dual mission—to prepare students for an occupation and for college.
6. High expectations for all students to succeed accompanied by attempts to minimize grouping of students by ability.
7. A curriculum organized around an industry or a discrete set of subjects.
8. The integration of theory and practice in the courses of instruction.
9. Strong linkages with business and industry and sometimes with local institutions of higher education.
10. Leadership in the office of the principal that is at the same time inspiring, sensitive, and firm.

The schools in this study are not vocational high schools in the traditional sense of the term. They are all attempting to blur the lines between vocational and academic education by integrating career and college preparation for all students enrolled. They are defining vocational education in a new and broader way than it has been defined in the past.

Educators in these schools realize that the world is changing and the occupational needs of the future will require students to obtain additional formal education as well as on-the-job training. Traditional definitions of vocational education as preparation for

entry-level employment are too narrow and limiting for the teachers who teach and the students who learn in these classrooms. Policymakers must join the schools in this endeavor to develop and disseminate broader, more appropriate definitions of occupational education for the 1990s and the twenty-first century.

These high schools that we have studied prepare students to enter four-year colleges and they offer a full range of occupational courses within particular specialties. Many parents do not wish to send children to a school that channels students away from the highest academic aspirations. At the same time, regardless of parental aspirations, reality demands we recognize that not all students wish to extend their formal education through four plus years of college.

In the good high schools we are writing about, students have a range of choices for life after high school: four-year college, professional institutes, two-year college, a job with career prospects, or a combination of college and work. The last option listed is an interesting one. To succeed in college, some low-income and minority students may need the self-confidence that comes from knowing that one has a set of skills, that one is "good at something." Also, the income from a good part-time job can be used to help meet college costs.

Faced with increasingly rigorous graduation requirements and material that must be covered, little time remains for these teachers to continue the work of integrating academics with occupational skills. Virtually all of the teachers and administrators interviewed in this study agree that it is valuable to incorporate their occupational specialties into English, social studies, math, and science classes. They also say it is valuable to incorporate math, science and communication skills into the occupational courses. What they need are the time and the resources with which to do it.

Policymakers at the district level and the national level must understand that in order to combine college preparatory work and occupational courses, the school must operate under a longer than normal school day—at least eight periods and preferably nine are needed to have these programs operate efficiently and effectively.

The curriculums in most of these schools are organized around an industry (e.g., aircraft, agriculture, health, communications, fashion, electronics, construction trades, and finance), or a discrete set of subjects (e.g., mathematics, science, materials sciences, space

sciences, and environmental protection). The specialized high school is better able to afford expensive equipment because it can reap the benefits of economies of scale in the use of that equipment.

There are other arguments to support the concept of the specialized high school. It is a characteristic of humans that different people like different things. When schools appeal to the different interests of students (e.g., some like aircraft maintenance and some like fashion design), one may postulate that students will display a higher motivation to study and learn. Likewise, specialized high schools appeal to the specialized interests of faculty, and this should promote colleagiality amongst members of the faculty.

Recent research indicates that faculty colleagiality is a significant determinant of school performance (Little, 1982, 1987). That same research suggests that faculty colleagiality is a fragile quality in conventional schools, but the bond of a common interest should render colleagiality a more stable quality in specialized schools, both amongst faculty and students, and also between groups of faculty and groups of students.

Specialization in high schools allows greater opportunity to design a coherent, sequential, and comprehensive curriculum. Such a curriculum serves to reduce the "milling around" type of course-taking behavior so typical of secondary students in their choices of electives. A specialized high school is better able to attain a proper articulation between its offerings and the curricular content in postsecondary programs and in programs of formal on-the-job training.

Having a single focus also helps the school gain the support of the industry that identifies with it. Most of these nine schools have an active advisory committee composed of business and industry executives who support the programs and offer internships and other work experiences to students. The strength and power of these advisory committees cannot be underestimated. These groups give advice on curriculum matters, help teachers and students see real connections between school and work, and become advocates for the school.

Advisory groups are a primary source of linkage between theory and practice in these exemplary schools. In the typical high school, academic and vocational courses are isolated from each other with respect to curricular content. Teachers of academic courses seldom provide examples of why the symbolic ideas and mathematical abstractions they

present to their students are important in the real world, with the result that students fail to understand why they should learn what the teachers demand they learn. Beyond this simple matter of motivation stands the whole matter of learning styles (Gardner, 1983). There are several ways that people can be smart, and what works best in the standard mode of academic instruction, that is, what Howard Gardner of Harvard calls linguistic intelligence and logical-mathematical intelligence, are probably strengths in a minority of the secondary school population. This is not meant to suggest that students should not learn academic content—to acquire, that is, linguistic and mathematical reasoning skills, possibly to a very high level—but that those skills are taught much more effectively in a contextual setting, making constant application of theory to practice.

Even the best work of the academic teacher in integrating theory and practice cannot serve the needs of students fully. The opportunities for teaching theory through practice that exist in well-designed occupational courses far exceed those ordinarily to be found on the academic side. The transferability of skills learned in school to life outside schools is likely to be enhanced as theory and practice are linked (Resnick, 1987). With regard to economic consequences (the implications are much broader than economic, of course), the objective is to help future workers to be more adept at problem solving on the job and to possess adaptive learning skills.

It is imperative that policymakers at all levels become acquainted with the value of school/industry partnerships and other mechanisms which aid the integration of theory and practice.

The schools in this study do not have the image problem that many vocational high schools have. All of them have either a long tradition of excellence or a growing legacy of respectability, such that they are attractive to students at all levels of ability. They are not "dumping grounds" for underachieving youngsters. They have student populations which are heterogeneous with regard to presently measured school achievement and the classes, for the most part, contain students of many ability levels. School personnel have high expectations for all of these students.

The schools try to emulate the American dream of equal opportunity. Segregating students by achievement serves to lower expectations of students who attend school at the low end of the scale. Another reason is that the existence of the exemplary schools of the types we are describing should do as little damage as possible to schools that are not yet

exemplary. "Creaming" the best students for the exemplary schools robs other schools of their student resources.

Tracking, like school segregation, has the general effect of lowering the aspirations of students who are not doing well at the present time (Oakes, 1985). The exemplary schools follow several different strategies, often in combination, to help make sure that the lower achievement students make it through the college preparatory curriculum. These include the following: peer tutoring; tutoring by faculty; tutoring by personnel from the related industry, keeping the school open afternoons and evenings, and conducting summer sessions to allow students who are behind in their school work to catch up.

Most of the schools we studied are described as safe. Do parents select these schools for their youngsters because they are safe or because their children are interested in the occupational specialty? Probably a little bit of both is in the minds of those who help children select a high school. The safety factor is not trivial. A safe, orderly environment is a prerequisite for learning. In schools where students are selected for admission based on their interest in the specialty and where staff are dedicated to providing an excellent education for students of all ability levels, behavior problems are minimal. Teaching and learning is serious business in these schools and the people who enter the buildings each day have respect for the process and respect for one another.

Another common characteristic of these schools is that the students feel special. These feelings stem from the fact that most of the schools have selection processes which recognize the unique set of experiences and interests each student brings to the school. Acceptance into the school is a vote of confidence for the individual. The students also experience increasing feelings of success as they proceed through the school. They have opportunities to demonstrate their ability academically and in hands-on activities which are recognized locally, regionally, and, in many cases, nationally. As a result, a student's self-esteem is enhanced.

With the dropout statistics as high as they are in major cities in this country, any school which has developed successful holding power programs is doing something right and should be supported. Successful schools such as these need more resources and more control over decisions that affect classroom learning. Principals need to be able to interview and select their own teachers, hire part-time teachers for their occupational classes, and provide opportunities for staff development within industry for both academic and

occupational teachers. Laboratories and equipment must be continually updated. Teachers and students should participate actively in the decision making processes in their schools. Often the support for such structural change and for innovative schools and programs, as described herein, is lacking at higher levels of administration. Funding initiatives should support and encourage innovation.

The schools identified in this report and other schools that are moving in the direction of providing excellent career and college preparatory education should receive adequate funding to carry out their mission. It is ironic that schools which are not doing a good job are the ones which receive more money—receiving extra funds for dropout prevention and for raising low test scores, for example. At the same time, the schools that are exemplary struggle to maintain their momentum. As they become more successful and student outcomes improve, resources are taken away from them. It is our hope that the patterns of exemplary career/college preparatory education presented in this paper will serve as models to be replicated throughout the country. This will occur only if sufficient amounts of support and funding are forthcoming.

REFERENCES

Adelman, N. E. (1989). *The case for integrating academic and vocational education.* Washington, DC: Policy Studies Associates, Inc.

American Appraisal Associates, Inc. (1985). *Boeckh building valuation manual.* Milwaukee, WI: Author.

Barker, R., & Gump, P. (1962). *Big school, small school.* Stanford, CA: Stanford University Press.

Chambers, J. G. (March-April, 1981). An analysis of school size under a voucher system. *Educational evaluation and policy analysis.*

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Hayward, B. J., Adelman, N. E., and Apling, R. N. (1988). *Exemplary secondary vocational education: An exploratory study of seven programs.* Washington, DC: Policy Studies Associates, Inc.

Little, J. W. (1982). Norms of colleagiality and experimentation: Workplace conditions of school success. *American Educational Research Journal, 19*(3), 325-340.

Little, J. W. (1987). Teachers as colleagues. In V. Koehler (Ed.), *Educators handbook: A research perspective* (pp. 491-518). New York: Longman.

Monk, D. H. (1987). Secondary school size and curriculum comprehensiveness. *Economics of Education Review, 6*(2).

Mullis, I. V. S., & Jenkins, L. B. (1988). *The science report card: Elements of risk and recovery.* Princeton, NJ: Educational Testing Service.

New York City Board of Education, The High School Division. (1987-88). *Comparative analysis of the organization of high schools.* New York: Author.

Oakes, J. (1985). *Keeping track.* New Haven, CT: Yale University Press.

Resnick, L. B. (1987). Learning in school and out. *Educational Researcher, 16*(9), 13-20.

Smith, J. P., & Welch, F. R. (1989). Black economic progress after Myrdal. *The Journal of Economic Literature, 27*(2), 519-564.

United States Department of Commerce, Bureau of the Census. (December, 1987). *United States statistical abstract for 1987.* Washington, DC: Author.

William T. Grant Foundation Commission on Work, Family, and Citizenship. (1988). *The forgotten half: Non-college youth in America.* Washington, DC: Author.

APPENDIX A

Interview Guide and Outline for Case Studies

Anne E. Just

INTERVIEW GUIDE AND OUTLINE FOR CASE STUDIES

I. Introduction

A. Description of the school

- type of school
- number, ethnicity, gender of students, faculty, and staff
- percent disadvantaged students; limited English proficient
- percent disabled students
- number students in Honors or Advanced Placement courses

B. Measures of success

- improvement on achievement tests (up?-down?-why?)
- attendance rate
- dropout rate (how do they determine it?)
- percent students going on to postsecondary education (breakdown by type of college)
- graduation rate

C. Reasons for the school's success

1. Why do you think this school was chosen as exemplary? (Probe: Get a sense of what exemplary means and what type of factors are causal.)
2. What makes this school/program popular with students? (Probe: See if popularity with students can be separated from answer given in Question #1.)
3. What criteria are used for measuring success of the school/program?
4. How would you describe the climate of this school?
5. How do students at your school compare with other high school students in the city?

II. Program Development

A. Background information

1. How did this program or school get started?
2. Who were the key people?
3. How much planning went into it?
4. Who was involved in the planning?
5. Could exemplary elements of this program or school be replicated by other schools? Why or why not? (Probe: What would be some of the main barriers?)

B. Mission

1. How would you describe the mission of this school?
2. Is there a written mission statement or a philosophy or rationale for the program?
3. Are there clear goals and objectives? (Probe: Who developed them? How often are they revised? Who revises them?)

III. The Curriculum

A. Description

1. What courses must students take in order to graduate?
2. What offerings make this school unique?
3. What career/trade areas are offered? How much shop or hands-on experience is required in each? Which ones are the most popular/prestigious? (Probe: Find out trends. Have there been recent changes in the offerings and/or mission of the school?
4. Does the school have a longer-than-typical school day?
5. Do some students attend for five years, or is a five year program under discussion? (If the basic program is three years, then the question would refer to a fourth year.)
6. Are students required to select a specialty area? If so, at what grade? To what degree are the programs specialized?

7. If the school is considered to be a vocational, occupational, or technical school, does it have both a college prep and an occupational skills program?

8. Does the school make a conscious effort to minimize tracking? If so, with what results?

B. Integration of academic and vocational courses

1. Do academic and vocational teachers meet at a common time to plan together? How Often?

2. How do teachers integrate academic skills within vocational classes?

3. How do teachers use vocational applications within academic classes?

4. Do academic and vocational teachers work together on projects? Give examples.

5. Do students ask questions of their academic teachers that derive from vocational instruction and vice versa?

6. What are the main barriers to integrating academic and vocational education?

7. Can you give some examples of curriculum integration?

8. Have efforts been made to introduce academic teachers to the specialty area(s)?

9. Have efforts been made to help vocational teachers incorporate math, science, and communication skills into their courses?

C. Outreach efforts

1. Are efforts made to seek articulation between secondary and postsecondary programs (e.g., to reduce time to obtain an A.A. degree)?

2. What efforts are being made to provide articulation between secondary programs and the intellectual content of training in the workplace (On-the-Job Training in its various forms)?

3. What sort of linkages does the school/staff have with business, trade unions, and the community? How were these developed?

4. Does the school have an advisory committee(s)? Active or not active?

5. Does the school help students find summer internships or other work experience? How?

6. How actively and in what ways are parents involved in the school?

D. Classroom practices

This is a description section based upon our classroom observations in academic and vocational classes.

IV. Students

A. Selections process

1. Is the school serving predominantly students who are academically strong?

2. How are students recruited?

3. What criteria are used for selecting students?

B. Support services

1. What special services/opportunities are available for advanced students?

2. What special services/opportunities are available for "at risk" students?

3. What special services/opportunities are available for disabled students?

4. Does the school have a summer program? If not, where do your students go? If so, what kind and who is served?

5. Does the school provide tutoring by college students? Peer tutoring?

V. Faculty

A. Selection process

1. How do you find the teachers needed for this school/program?

2. Is it more difficult or less difficult to find good teachers now than in the past?

B. Staff development

1. What is the nature and frequency of inservice training for the teachers? How is this provided?

2. Are teachers involved in curriculum development or revision? To what extent?

3. Are teachers involved in innovation of any kind (e.g., curriculum, scheduling, organization of the school, and outreach activities)?

4. What is the general attitude toward innovation at your school?

5. Are business/industry internships, or other work experiences, offered to *teachers*? When? By whom?

6. Are any special traits needed for teachers to succeed at this school?

7. Does the school offer internships for new teachers?

8. Does the school provide inservice training for teachers in other schools?

VI. Funding

1. How are funds from the Vocational Education Act awarded? Are you aware of any priority areas for these funds?

2. Describe the process for applying for and receiving special funds or grants. (Probe: Are these funds channelled through the central Board of Education?)

3. In what areas are the needs of the school unmet? What methods/strategies could be used to meet these needs? (Probe: Estimates of costs and priorities for bringing about changes.)

4. Is the school well equipped? Do you need more or better equipment?

5. Is the supply of instructional materials, including but not restricted to textbooks, said to be adequate? If not, what are the deficiencies?

6. Has the school received any gifts or contributions? What were they? Who were the donors?

VII. Issues

This is a descriptive section based upon our interviews and classroom observations.

APPENDIX B

DELIVERY SYSTEM SPECIFICATIONS USED FOR THE ANALYSIS OF VOCATIONAL-TECHNICAL AND REGULAR HIGH SCHOOL COSTS

These delivery systems were originally derived from the *AEFP/RCM Prototype Database* and where data was available were modified to reflect the standards of service observed in the Chicago Public Schools and the New York City School System. These delivery systems are not intended to reflect or match up exactly with the costs in either system, but were designed to reflect the basic patterns of resource allocation observed in the sample schools. The per pupil cost data presented in Tables 2 and 12 in the text are based on the data in this Appendix.

DELIVERY SYSTEM SPECIFICATIONS

*CLASS=INSTRUCTION SVS / CODE=03.01.1.100 / DESCRIPTION=DEPT INS: GENERAL ART / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.2	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	2.0	$6.00	2	100	$201	$6.91
4210	INSTR SUPPLIES & MTRLS	$	600.0	$1.00	.	.	$600	$20.69
6000	F&E:HS-ART	QTY	1.0	$3,635.61	1	20	$727	$25.07
SERVCODE							$9,099	$313.77

*CLASS=INSTRUCTION SVS / CODE=03.02.1.100 / DESCRIPTION=DEPT INS: GENERAL ENGLISH / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	4.00	$6.00	2	100	$401	$13.83
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$8,173	$281.83

*CLASS=INSTRUCTION SVS / CODE=03.03.1.120 / DESCRIPTION=DEPT INS: FOREIGN LANG: 2ND YR / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	1.00	$6.00	2	100	$100	$3.46
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,872	$271.45

*CLASS=INSTRUCTION SVS / CODE=03.04.1.430 / DESCRIPTION=DEPT INS: HIGH SCHOOL MATH / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,772	$268.00

*CLASS=INSTRUCTION SVS / CODE=03.07.1.100 / DESCRIPTION=DEPT INS: GENERAL PHYSICAL EDUCATION / PUPILS SERVED=46

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$164.60
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.84	$1.00	.	.	$39	$0.84
6000	F&E:HS-PHYSICAL EDUC	QTY	1.00	$3,858.91	1	20	$772	$16.78
SERVCODE							$8,382	$182.22

*CLASS=INSTRUCTION SVS / CODE=03.07.1.910 / DESCRIPTION=DEPT INS: HEALTH / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	1.08	$1.00	.	.	$31	$1.08
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,789	$268.60

*CLASS=INSTRUCTION SVS / CODE=03.09.1.100 / DESCRIPTION=DEPT INS: SCIENCE, GENERAL / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	1.08	$1.00	.	.	$31	$1.08
6000	F&E:HS-BIOLOGY	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,789	$268.60

*CLASS=INSTRUCTION SVS / CODE=03.09.1.460 / DESCRIPTION=DEPT INS: BIOLOGY / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.24	$37,858.13	.	.	$9,086	$313.31
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	2.88	$1.00	.	.	$84	$2.88
6000	F&E:HS-BIOLOGY	QTY	1.00	$10,285.01	1	20	$2,057	$70.93
SERVCODE							$11,346	$391.25

*CLASS=INSTRUCTION SVS / CODE=03.09.1.470 / DESCRIPTION=DEPT INS: CHEMISTRY / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.24	$37,858.13	.	.	$9,086	$313.31
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	1.00	$6.00	2	100	$100	$3.46
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.44	$1.00	.	.	$216	$7.44
6000	F&E:HS-CHEMISTRY	QTY	1.00	$7,119.96	1	20	$1,424	$49.10
SERVCODE							$10,946	$377.44

*CLASS=INSTRUCTION SVS / CODE=03.10.1.100 / DESCRIPTION=DEPT INS: SOCIAL SCIENCE, GENERAL / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	1.00	$6.00	2	100	$100	$3.46
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,872	$271.45

*CLASS=INSTRUCTION SVS / CODE=03.10.1.486 / DESCRIPTION=DEPT INS: HISTORY, U.S. / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:HS-SUBJECTS W/O LABS	QTY	1.00	$332.59	1	20	$67	$2.29
SERVCODE							$7,772	$268.00

*CLASS=INSTRUCTION SVS / CODE=04.15.1.100 / DESCRIPTION=DEPT INS: IND. ARTS, GENERAL COURSES / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	1.00	$6.00	2	100	$100	$3.46
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:VE-SHOP WOOD	QTY	1.00	$13,235.54	1	20	$2,647	$91.28
:ERVCODE							$10,453	$360.44

*CLASS=INSTRUCTION SVS / CODE=04.15.1.440 / DESCRIPTION=DEPT INS: METAL I / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-SHOP METAL	QTY	1.00	$11,565.14	1	20	$2,313	$96.38
SERVCODE							$10,066	$419.42

*CLASS=INSTRUCTION SVS / CODE=04.15.1.441 / DESCRIPTION=DEPT INS: SHEET METAL SHOP, 4 PER/DAY / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.60	$37,858.13	.	.	$22,715	$946.45
4210	INSTR SUPPLIES & MTRLS	$/PUP	30.24	$1.00	.	.	$726	$30.24
6000	F&E:VE-SHOP METAL	QTY	1.00	$11,565.14	1	50	$5,783	$240.94
SERVCODE							$29,223	$1,217.63

*CLASS=INSTRUCTION SVS / CODE=04.16.1.100 / DESCRIPTION=DEPT INS: BUSINESS, GENERAL COURSES / PUPILS SERVED=29

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$261.09
4110	TEXTBOOKS: PAPERBACK	QTY/PUP	1.00	$6.00	2	100	$100	$3.46
4110	TEXTBOOKS: HARDCOVER	QTY/PUP	1.00	$18.00	6	100	$120	$4.13
4210	INSTR SUPPLIES & MTRLS	$/PUP	0.48	$1.00	.	.	$14	$0.48
6000	F&E:VE-SHOP WOOD	QTY	1.00	$13,235.54	1	20	$2,647	$91.28
SERVCODE							$10,453	$360.44

*CLASS=INSTRUCTION SVS / CODE=04.17.1.420 / DESCRIPTION=DEPT INS: AUTOMOTIVE TECHNOLOGY
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-AUTO MECHANICS	QTY	1.00	$26,670.33	1	20	$5,334	$222.25
SERVCODE							$13,087	$545.30

*CLASS=INSTRUCTION SVS / CODE=04.17.1.421 / DESCRIPTION=DEPT INS: AUTOMOTIVE TECH, 4 PER/DAY
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.60	$37,858.13	.	.	$22,715	$946.45
4210	INSTR SUPPLIES & MTRLS	$/PUP	30.24	$1.00	.	.	$726	$30.24
6000	F&E:VE-AUTO MECHANICS	QTY	1.00	$26,670.33	1	50	$13,335	$555.63
SERVCODE							$36,776	$1,532.33

*CLASS=INSTRUCTION SVS / CODE=04.17.1.422 / DESCRIPTION=DEPT INS: AUTOMOTIVE BODY SHOP
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-AUTO BODY SHOP	QTY	1.00	$8,722.42	1	20	$1,744	$72.69
SERVCODE							$9,498	$395.73

*CLASS=INSTRUCTION SVS / CODE=04.17.1.426 / DESCRIPTION=DEPT INS: AUTOMOTIVE REPAIR
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-AUTO SHOP	QTY	1.00	$20,010.09	1	20	$4,002	$166.75
SERVCODE							$11,755	$489.80

*CLASS=INSTRUCTION SVS / CODE=04.17.1.427 / DESCRIPTION=DEPT INS: AUTOMOTIVE REPAIR, 4 PER/DAY
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.60	$37,858.13	.	.	$22,715	$946.45
4210	INSTR SUPPLIES & MTRLS	$/PUP	30.24	$1.00	.	.	$726	$30.24
6000	F&E:VE-AUTO SHOP	QTY	1.00	$20,010.09	1	50	$10,005	$416.88
SERVCODE							$33,446	$1,393.57

*CLASS=INSTRUCTION SVS / CODE=04.17.1.430 / DESCRIPTION=DEPT INS: ELECTRICAL TECHNOLOGY
/ PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-ELECTRONICS	QTY	1.00	$4,474.72	1	20	$895	$37.29
SERVCODE							$8,648	$360.33

*CLASS=INSTRUCTION SVS / CODE=04.17.1.470 / DESCRIPTION=DEPT INS: GRAPHIC ARTS / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-GRAPHIC ARTS	QTY	1.00	$14,135.24	1	20	$2,827	$117.79
SERVCODE							$10,580	$440.84

*CLASS=INSTRUCTION SVS / CODE=04.18.1.435 / DESCRIPTION=DEPT INS: CONSTRUCTION / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-CONSTRUCTION	QTY	1.00	$2,658.34	1	20	$532	$22.15
SERVCODE							$8,285	$345.20

*CLASS=INSTRUCTION SVS / CODE=04.18.1.445 / DESCRIPTION=DEPT INS: DRAFTING / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	3.36	$1.00	.	.	$81	$3.36
6000	F&E:VE-DRAFTING	QTY	1.00	$4,464.99	1	20	$893	$37.21
SERVCODE							$8,545	$356.05

*CLASS=INSTRUCTION SVS / CODE=04.18.1.450 / DESCRIPTION=DEPT INS: ELECTRICITY / PUPILS SERVED=24

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1201	CLASSROOM TEACHER	FTE	0.20	$37,858.13	.	.	$7,572	$315.48
4210	INSTR SUPPLIES & MTRLS	$/PUP	7.56	$1.00	.	.	$181	$7.56
6000	F&E:VE-ELECTRICITY	QTY	1.00	$4,948.65	1	20	$990	$41.24
SERVCODE							$8,743	$364.28

*CLASS=SITE ADM & SUP SVS / CODE=22.52.2.003 / DESCRIPTION=COUNSELING & GUIDANCE: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1401	SCHOOL PSYCHOLOGIST	FTE	2.5	$37,858.13	.	.	$94,645	$29.66
1410	SOCIAL WORKER	FTE	2.5	$37,858.13	.	.	$94,645	$29.66
1420	GUIDANCE COUNSELOR	FTE	5.0	$37,858.13	.	.	$189,291	$59.32
5000	PURCHASED SERVICES	$	10000.0	$1.00	.	.	$10,000	$3.13
6000	F&E: STD CONFIG-OTH PROF	QTY	1.0	$86.71	1	100	$87	$0.03
SERVCODE							$388,668	$121.80

*CLASS=SITE ADM & SUP SVS / CODE=22.53.2.003 / DESCRIPTION=MEDICAL SERVICES: HIGH SCHOOL / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1511	SCHOOL NURSE	FTE	1.5	$37,858.13	.	.	$56,787	$17.80
5000	PURCHASED SERVICES	$	13000.0	$1.00	.	.	$13,000	$4.07
6000	F&E:HS-HEALTH SERVICES	QTY	1.0	$923.92	1	100	$924	$0.29
SERVCODE							$70,711	$22.16

*CLASS=SITE ADM & SUP SVS / CODE=31.73.2.003 / DESCRIPTION=MAINTENANCE SERVICES: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
2400	SKILLED MAINT & CRAFTS	FTE	2.0	$44,654.40	.	.	$89,309	$27.99
4900	MISC SUPPLIES & MTRLS	$	35846.3	$1.00	.	.	$35,846	$11.23
SERVCODE							$125,155	$39.22

*CLASS=SITE ADM & SUP SVS/ CODE=03.20.2.001 / DESCRIPTION=HIGH SCH: GENERAL ADMINISTRATION / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1103	HIGH SCH PRINCIPAL	FTE	1.00	$68,887.50	.	.	$68,888	$21.59
1113	HIGH SCH ASST PRINCIPAL	FTE	3.20	$43,932.30	.	.	$140,583	$44.06
1180	ASST PRIN, INSTRUC SUPV	FTE	9.00	$37,858.13	.	.	$340,723	$106.78
1801	SUBJECT MATTER SPECLST	FTE	2.00	$37,858.13	.	.	$75,716	$23.73
2001	CLSFD DIR/ADMIN/MGR	FTE	1.00	$37,858.13	.	.	$37,858	$11.86
2100	PARAPROF & AIDES	FTE	3.75	$14,674.80	.	.	$55,031	$17.25
2200	OFFICE WORKERS	FTE	11.00	$23,009.70	.	.	$253,107	$79.32
4900	MISC SUPPLIES & MTRLS	$/PUP	1.47	$1.00	.	.	$4,691	$1.47
6000	F&E:HS-ADMINISTRATION	QTY	1.00	$1,955.38	1	100	$1,955	$0.61
6000	F&E:HS-CAREER CENTER	QTY	1.00	$450.29	1	100	$450	$0.14
6000	F&E:HS-STUDENT BODY OFF	QTY	1.00	$371.03	1	100	$371	$0.12
6000	F&E:HS-AUDIO VISUAL EQUIP	QTY	1.00	$43,638.28	1	100	$43,638	$13.68
6000	F&E:HS-STAGE/AUDITORIUM	QTY	1.00	$9,433.71	1	100	$9,434	$2.96
SERVCODE							$1,032,445	$323.55

*CLASS=SITE ADM & SUP SVS / CODE=21.42.2.003 / DESCRIPTION=LIBRARY SVS: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
1301	LIBRARIAN	FTE	3	$37,858.13	.	.	$113,574	$35.59
4120	LIBRARY BOOKS	$/PUP	5	$1.00	.	.	$15,955	$5.00
6000	F&E:HS-LIBRARY	QTY	1	$16,455.04	1	100	$16,455	$5.16
SERVCODE							$145,984	$45.75

*CLASS=SITE ADM & SUP SVS / CODE=31.74.2.003 / DESCRIPTION=CUSTODIAL SVS: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
2300	CUSTODIAN	FTE	13.0	$22,037.20	.	.	$286,484	$89.78
4900	MISC SUPPLIES & MTRLS	$	7921.2	$1.00	.	.	$7,921	$2.48
6000	F&E:HS-MAINT & OPERATIONS	QTY	1.0	$153.33	1	100	$153	$0.05
SERVCODE							$294,558	$92.31

*CLASS=SITE ADM & SUP SVS / CODE=31.74.2.103 / DESCRIPTION=UTILITY SVS: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
4810	ENERGY SUPPLIES & MTRLS	$	100000	$1.00	.	.	$100,000	$31.34
5600	UTILITY SERVICES	$	90000	$1.00	.	.	$90,000	$28.20
SERVCODE							$190,000	$59.54

*CLASS=SITE ADM & SUP SVS / CODE=31.75.2.003 / DESCRIPTION=SECURITY SERVICES: HIGH SCH / PUPILS SERVED=3,191

OBJECT CODE	OBJECT DESCRIPTION	UNITS OF MEASURE	RESOURCE QUANTITY	RESOURCE COST	YRS OF LIFE	% TIME UTILIZED	COST PER DELIVERY SYSTEM	COST PER PUPIL SERVED
2500	SECURITY PERSONNEL	FTE	7	$19,317.60	.	.	$135,223	$42.38